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LECTURE II.*—THE PROBLEM OF ŒDEMA.

"When albumen is proved to exist in the urine I look upon it with anxiety, and the confirmed derangement I always view with dread."—R. BRIGHT, Goulstonian Lectures, 1833.

I CONCLUDED my previous lecture with a quotation from Bright, in which he expressed the opinion that an increase in the urea of the blood was at least a partial explanation of the phenomena which we group together as uræmia. When we consider the difficulties of blood analysis, this observation becomes a very wonderful one, but we recognise to-day that it is at least improbable that the accumulation of nitrogenous substances in the blood is an actual cause of uræmia, however useful an index these substances may be of the imminence of such a catastrophe.

In this lecture I am going to discuss the problems of the so-called "renal" œdema, a subject of even greater complexity than that of uræmia. The work of the chemical and experimental laboratories has advanced to a degree that makes it quite impossible for any man to form a useful judgment on such subjects from the result of his personal observation alone, and the intricacy of many of the researches into œdema is such that the wheels of the intelligence become almost clogged in the effort of sifting the important from the insignificant facts; but I believe that close study leads one to the conclusion that when œdema occurs in a case of nephritis it is evidence of the existence of an extra-renal factor which may explain the nephritis, but is never the consequence of nephritis. We speak of "renal" œdema, and we are accustomed to look on nephritis as one of the common causes of œdema, but I am sure that we should be very hesitant in adopting such a view. The time has certainly not yet come when any man can claim to understand with full clarity the mechanism of œdema, but I believe that if the existing data are carefully and logically examined the balance of evidence to-day is against œdema ever being the direct consequence of disease of the kidney, though it is possible that the cause of the œdema may also provoke disease of the kidney.

THE VIEWS OF BRIGHT.

It is, I think, accurate to say that Bright's most famous work directed the attention of the world to the association between albuminuria, œdema, and disease of the kidneys, and it is perhaps an excessive piety which has made many of his successors cling to the notion that such œdema is a necessary consequence of nephritis. I say an excessive piety because examination of Bright's actual words reveals the same dislike for dogmatism regarding this problem that we find in his expressed opinion on so many subjects. In his Goulstonian lectures he said:—

"My conviction is complete as to the existence of some decided connection between the three facts—anasarca, coagulable urine, and diseased function going on to diseased structure of the kidney. How these facts are connected or what necessary dependence the one may have upon the other, it is indeed difficult to point out, and some might suppose that we are rather perverting the order of events when we speak of the condition of the kidneys as causing anasarca";

but it is clear from the succeeding lines that his own opinion was in favour of the theory that œdema in nephritis is due to the disease of the kidneys.

If we follow the life-work of another great pioneer of internal medicine, Claude Bernard, we cannot, I think, fail to be impressed by the fact that his conviction that the mystery of diabetes mellitus was to be solved by a fuller understanding of hepatic disturbance not only wasted months of his own time, but led to many of his countrymen subsequently wasting years through too pious a belief in the infallibility of the master. The more carefully we read the works of Bright, the more must we be impressed by his caution in avoiding dogmatism; nor must we fail to note that occasionally, when dogmatic, he was wrong. Prof. W. S. Thayer, of Baltimore, in an inspiring oration delivered last year at Guy's Hospital, recalled to his audience the fact, for example, that Bright stated that chorea was often the result of pericarditis. But on the question of the œdema seen in nephritis Bright was more cautious, and though he formulated his personal opinion he did so with reserve.

THE MAIN SYNDROMES OF NEPHRITIS.

It is now common knowledge that when cases of nephritis are examined from the clinical point of view there are many which stand out clearly owing to the presence of certain main features and a corresponding absence of other signs and symptoms. In my previous lecture I selected a case of cystic disease as illustrating in this manner uræmia without œdema. It is not more difficult to find cases where œdema and albuminuria are similarly conspicuous and uræmia and nitrogen retention absent. In Table I. I have set

TABLE I.

Marked.	..	Albuminuria.	.. Slight.
,,	..	Œdema.	.. Absent.
Absent.	..	Cardiac hypertrophy and hypertension.	.. Marked.
,,	..	Nitrogen retention.	.. ,,
,,	..	Tendency to uræmia.	.. ,,
Normal.	..	Urea in urine.	.. Low concentration.
Normal or diminished.	..	Amount of urine.	.. Polyuria or suppression.
Normal.	..	Specific gravity of urine.	.. Low.

out the main features of cases of renal disease, placing in the columns on either side the characteristics of the two extreme types which diverge from the main general picture. These contrasting types constitute the hydropiginous and azotæmic nephritis of French writers and are often referred to in British and American writings under similar titles. It is, as I have said, quite easy to secure examples of either class, but to explain how disease of the kidney can produce results so entirely divergent is excessively difficult.

An explanation was at last offered by the theory of Widal, who, working with Javal in the early days of the present century, put forward the hypothesis that nephritis might affect the kidney in such a manner as to interfere either: (*a*) with its power of excreting urea and kindred nitrogenous substances, or (*b*) with its power of eliminating salts of which sodium chloride is the most important. Cases of albuminuria with œdema, of the type to which long custom in this country has given the name of "chronic parenchymatous nephritis," were thus explained as being examples of a derangement of the capacity of the kidney to excrete sodium chloride without interference with the excretion of urea and other nitrogenous bodies.

THE THEORY OF SALT RETENTION.

This view, which I gather from a very recent article by Lemierre to be still current, is founded chiefly on the fact that the administration of salt to patients with so-called renal œdema is followed by an increase in the œdema and a failure of the salt to appear in the urine. And the successful reduction of œdema by means of salt-free diets in some cases is held to be strong confirmation of the theory. But if the salt retention is due to failure on the part

* Lecture I. appeared on March 17th.

of the kidney, we should find an increase in the blood-chlorides, and this has never been demonstrated in these cases. Moreover, it is now generally agreed that diminished excretion of sodium chloride is even more marked in the case of diseases such as cardiac failure and lobar pneumonia, where the renal function is not interfered with. When one proceeds from this to point out that the same kidneys which at first secreted a urine poor in chlorides will a week later, when œdema is subsiding, secrete a urine containing abundant chlorides, it becomes increasingly probable that the retention of salt is due to some extra-renal cause, or that, in the striking phrase of Fishberg, there has been a " pre-renal deviation " of both water and chloride, or, in other words, that these substances have been diverted into the tissues without the kidneys having had an opportunity of excreting them.

We know to-day that salt-free diets are of uncertain utility in œdema, but that on the whole they are more likely to be effective in cases of cardiac failure than in cases of so-called nephritic œdema. The salt-retaining kidney must, I fear, be dismissed as a myth as far as it may serve as an explanation of œdema, for, if there is any type of kidney which is capable of retaining salt, it is not that associated with œdema, but rather the kidney where extreme destruction has led first to nitrogen retention, and, last of all, to retention of bodies such as sodium chloride which are normally not greatly subjected to concentration in their passage from blood to urine. Table II. shows the degree of

TABLE II (*after Fishberg*).

Substance.	Concentration in—		No. of times concentrated.	In renal insufficiency.
	Urine.	Blood.		
Urea	2000	30	65	Increased.
Creatinine ..	75	2	35	,,
Phosphate ..	150	3	50	,,
Chloride ..	500	350	1·5	Not increased.
Calcium ..	15	10	1·5	,,

concentration undergone by certain of the commoner substances in the urine as opposed to their state in the blood. A short study of the figures in the third column gives the clue to the problem as to why some constituents, such as urea and phosphates, are so notably increased in the blood of all patients with renal impairment of high degree, for it is surely natural that the greatest difference will be found in those substances which are normally most concentrated by the healthy kidney. But with the final stages of renal impairment, even these bodies which are concentrated but slightly by the normal kidney become affected, and then, as de Wesselow and others have shown, an increase in the chlorides of the blood becomes apparent and may be demonstrated by means of salt test-meals.

The most marked examples of such retention are found in mechanical obstruction. Braasch has recorded a case of obstruction to both ureters where the blood chlorides reached the extreme figure of 1500 mg. per 100 c.cm., and Fishberg has observed a case where the figures rose to 1000 mg. In uræmia following nephritis the concentration of blood chlorides does not often approach such heights, but an increase above the normal is probably always present in the terminal stages. We must, on the other hand, note that in such cases with high concentration of chlorides in the blood œdema is often conspicuously absent. If now we summarise the facts concerning chloride retention in nephritis, we can, I think, draw three important conclusions :—

1. That in cases of " renal " œdema there may be evidence of accumulation of chlorides in the watery subcutaneous tissues, but there is no evidence of chloride retention in the blood.
2. That there are cases of renal disease in which retention of chlorides in the blood is present, but such cases do not as a rule exhibit œdema.
3. That it is, therefore, probable that the accumulation of chlorides in the œdema fluid is due to an extra-renal factor.

AN ILLUSTRATIVE CASE.

From these theoretical considerations it will now be well to turn to a particular case illustrative of so-called renal œdema, a case selected on account of the absence of nitrogen retention and cardiovascular features.

The patient, a man aged 22, has been under my care during the last 18 months. His early history was of insignificant childish ailments—measles, chicken-pox, and whooping-cough having affected him, but all slightly. Five years ago he had a trivial attack of pleurisy, and three years ago was troubled with a transient skin eruption. In the summer before last, during a holiday at a time when his health appeared to be excellent, he observed one day after bathing that his abdomen and legs were swollen. A few weeks later he noticed this swelling in the face, and became troubled with a transient epigastric pain, accompanied after a few days by diarrhœa. He noticed nothing the matter with his urine.

In the late autumn of 1926 he consulted me at the Middlesex Hospital, when he was suffering from an obvious œdema of the legs and lumbar region, together with some puffiness of the face. Ascites was present, and there was evidence of bilateral hydrothorax. The blood pressure was 140/90; the heart apparently normal. After two days in bed the blood pressure was found to be 100/70. The optic fundi were quite normal, the urine had a specific gravity of 1020, and contained large amounts of albumin, together with a few hyaline and granular casts, but no blood. The Wassermann reaction was negative, and analysis of the blood gave normal figures as regards nitrogenous constituents and chlorides.

He was admitted to the Middlesex Hospital under the care of my senior colleague, Dr. C. E. Lakin, and was put on a diet containing abundant protein and no fat. The urine was found to vary in volume between one-third and three-quarters of a litre per diem. The daily albumin loss amounted to as much as 10 g. or more. Repeated blood analyses confirmed the normal nitrogen figures. The sedimentation time of the red corpuscles was considerably diminished, and the basal metabolic rate was 19 per cent. below normal. The urea in the urine varied between 2 and 3 per cent., and, after the administration of 15 g. of urea, rose to just about 3, showing full concentrating power. In addition to the generous protein diet, he was given urea in doses of 60 g. or more daily, and in a few weeks the œdema of the legs, face, and lumbar region completely disappeared, although there remained evidence of slight ascites. The daily albumin loss remained high, but the patient felt quite well in himself throughout the treatment. He has been seen at regular intervals during the subsequent 12 months, and though his œdema has fluctuated and never entirely disappeared it has never reached a degree sufficient to make him abandon his work. The albuminuria has always been excessive. He has, from time to time, been given thyroid extract, and shows a marked tolerance for this substance, but I have been unable to observe any definite influence thereby exerted on his general state.

NEPHROSIS.

Cases of this type are, one gathers, typical of that group which it is now fashionable to describe under the title of " nephrosis," a word apparently first suggested by Müller and since adopted very widely, especially in the United States by Epstein and others, and in Germany by Volhard and Fahr, Munk, and their followers. The word is ambiguous, in itself it conveys no clear concept, and a study of the literature reveals that it is used with a different connotation by different writers. In a paper published in conjunction with E. C. Dodds and D. T. Davies last year, an endeavour was made to define the prevalent views on the subject. We wrote :—

" According to the conception of Munk, all renal disease with œdema, apart from heart failure, should be classed as nephrosis, whilst cases with hæmaturia, uræmia, and cardiovascular complications constitute true nephritis. When a waterlogged patient gets an attack of hæmaturia, and the blood pressure rises and nitrogen retention appears, it is nephritis complicating nephrosis ; when, on the other hand, a patient after a febrile hæmaturia with transient hyperpiesis passes into a condition of anasarca, that is nephrosis supervening upon nephritis. It must be noted that in contrast to these views many British pathologists hold that the ætiology of all kidney disease is toxic, degeneration being always the first effect and reaction a later, but not inevitable, consequence, and that degeneration is itself an inflammatory phenomenon, whether followed by reaction or not."

I am interested to note that a recent essay by such an authority as Prof. Ludwig Aschoff confirms what

I have quoted as being a correct interpretation of the German view. He writes:—

"The meaning of this word has given rise to many differences of opinion in the past decades. . . . We understand it to mean those diseases of the kidneys which are characterised chiefly by degenerative changes of the tubular apparatus," and later, "the characteristics of Volhard's nephrosis, in the strict sense, are marked œdema and the excretion of much albumin in the urine, absence of the least increase of blood pressure, and, therefore, also of the slightest hypertrophy of the heart."

The case I have presented may, therefore, be accepted as a typical example of nephrosis, and it is further typical of this group in that the patient exhibits the lipæmia which is, I believe, characteristic of all cases of pure nephrosis, and present in the vast majority of examples of "renal" œdema of all classes.

Biochemical Aspects of Nephrosis.

The biochemical investigation of cases such as the one I have dealt with yields results which are largely negative: (*a*) The total daily volume of the urine is somewhat reduced when observed over any long period, but its urea-content is high during periods when one would expect it to be high. The specific gravity is consequently normal in its variations. Blood is absent, and the only casts are hyaline or granular. The notably abnormal constituents are albumin and certain lipoid substances which can be recognised by their double refractive properties when the centrifuged urine is examined by a microscope fitted with a polariscope. (*b*) The blood is normal as regards the nitrogenous substances and salts in solution, but is abnormal in that it almost invariably contains an excessive amount of cholesterol. Examination of the blood proteins shows that the normal proportion of albumin to globulin is reversed. (*c*) The basal metabolic rate is usually considerably lower than the normal.

Of these various findings the most striking is excessive cholesterol in the blood, which is incidentally almost certainly the explanation of the doubly refractive lipoids found in the urine. In Table III. I give the results of the estimation of cholesterol in the blood of the patient I have described at different periods. It will be observed that they are almost invariably high when compared with the normal.

TABLE III.

Date.	Blood-urea.	Blood cholesterol.	Œdema.
October, 1926 ..	—	209	—
November, 1926 ..	20	246	—
December, 1926 ..	19	294	Better.
February, 1927 ..	26	117	—
March, 1927 ..	23	348	Worse.
April, 1927 ..	29	528	Better.
December, 1927 ..	79	188	Much better.
March, 1928 ..	75	244	No œdema.

The subject of the blood cholesterol in nephritis has recently been carefully investigated by J. Maxwell in a large series of cases at St. Bartholomew's Hospital. He confirms the results of the numerous observers which Dodds, Davies, and I summarised in the communication already referred to. Maxwell found that an increase in the plasma-cholesterol is almost invariably associated with every type of renal œdema, and that though in chronic cases the actual height of the cholesterol figures is not necessarily proportional to the degree of œdema, its presence is evidence that the case will run a chronic course. He further concludes that renal œdema and the increased plasma-cholesterol are not related as cause and effect, but that both are probably the result of some toxic disease acting upon the cells of the reticulo-endothelial system.

As regards the reduced basal metabolic rate in cases of pure nephrosis, this factor has been stressed by Epstein, to whom we owe in such a large measure our knowledge of this group of cases. I have not personally experienced the success from the use of thyroid extract which he has claimed, and a good point of criticism is made by Murphy and Warfield, who point out that the water retention in the tissues of these patients gives them an illusive weight which renders estimation of the basal metabolism very difficult.

Pathological Aspects of Nephrosis.

It is not easy to speak with exactitude concerning the morbid anatomy of cases of lipoid nephrosis for the simple reason that they are seldom fatal, but run a very chronic course. It is indeed doubtful whether death ever occurs except as the result of some complicating or intercurrent disease. It is in this respect worthy of note that the termination is not infrequently due to a form of chronic peritonitis, possibly of pneumococcal origin, and perhaps due to accidental infection of the ascitic fluid. Cases of this type were included in a series reported by Dyke and have frequently been referred to by German authorities. When the kidneys of such a patient are secured, they are found to contain enormous quantities of cholesterol in the cells of the tubules and have the typical greasy appearance which has led to their being designated "myelin" kidneys. This condition was first described in 1902 by Kaiserling and Orgler, and examples have been demonstrated by McNee and others in this country. Through the kindness of my colleagues, Prof. James McIntosh and Dr. Lakin, I am able to show you a specimen this afternoon.

The histological characteristics of such kidneys are: (*a*) degenerative changes, usually confined to the tubules where the cholesterol esters are found in great profusion; (*b*) glomerular tissues little, if at all, damaged.

Rarity of Pure Lipoid Nephritis.

The number of cases in which it is possible to speak of a pure lipoid nephrosis is certainly limited. Elwyn, who has made important contributions to this subject, believes that in all cases there is an initial glomerulo-nephritis which often heals, leaving tubal damage which has resulted from the absorption of the pathological glomerular transudate. Against this view must be put that of Murphy and Warfield, who have actually been able to demonstrate the kidneys of a case in which not the slightest evidence of a glomerular lesion could be found. In cases such as the one I have described I find no evidence that there was an initial lesion affecting the glomeruli, and the opinion of Epstein and of the German physicians is also to this effect.

But we may, on the other hand, accept the possibility of a primary pure nephrosis, without suggesting that such a kidney may not easily undergo secondary damage of greater degree. An organ which is choked with cholesterol should from that fact alone be more readily susceptible to damage than is a normal organ. Or, if we examine the prognosis of such cases from the point of view of the possible effects of the prolonged hypercholesterolæmia, it is not necessary to suggest that such a blood condition is the result of renal damage, there is, indeed, no evidence for such a view, nor must it be assumed that the excess of blood cholesterol will produce a nephritis; we know, on the contrary, that patients with diabetes, or jaundice, or xanthoma may have hypercholesterolæmia for years without signs of kidney damage. We do know, on the other hand, that arterial lesions such as atheroma can readily be produced by cholesterol-feeding in animals; Scarff, in a recent series of experiments, has fully confirmed previous observations to this effect, and the work of Labbé and Heitz tends to show that the hypercholesterolæmia of chronic diabetes may be accompanied by such vascular changes that a very adverse effect on the general circulation, including the blood-supply to the kidneys, is to be expected.

There are, therefore, several reasons why cases of apparently pure lipoid nephrosis may subsequently develop signs of renal failure, and such a development is by no means incompatible with a primary condition

in which these features were completely absent. In the case I have described, for example, there appears during the last six months to have been a certain evolution which is perhaps ominous. The blood-urea and non-protein nitrogen have risen from their original normal level to figures which approach the low limits of the pathological. In addition to this, there seems to be a very slight, but definite, progressive elevation in the blood pressure, and if continued observation confirms these findings, we must, I believe, conclude that there is progressive change going on in the kidney. But even accepting such a development as the fate of a number of these cases, there remains a proportion in whom such an evolution never occurs, and we may, I think, draw certain conclusions from them, namely:—

1. That the only clinical evidence of nephritis presented by them is albuminuria.
2. That the balance of evidence is against the hypercholesterolæmia being an effect of renal damage.
3. That it is difficult to harmonise the localised histological appearances of the kidneys in these cases with the theory that this is a true primary renal disease.

Is Œdema the Result of Albuminuria?

Returning now to the problem of œdema, the question at once arises whether either the hypercholesterolæmia or the albumin-loss found in lipoid nephrosis will furnish the explanation of the œdema so conspicuous in these cases. As regards cholesterol, I have already pointed out that it does not appear to be the result of a renal lesion, but is rather the cause of the main renal abnormality. And when we inquire what relation it may have to the œdema, we are faced with two facts: (1) that in cases of hypercholesterolæmia due to jaundice or diabetes, there is usually no œdema, and (2) that, as Maxwell has shown, the cholesterol in "nephritis" does not vary in proportion to the œdema, and, therefore, these two features can scarcely be cause and effect.

When we examine the possible relation between the œdema and the albuminuria, we become concerned with the views of Epstein, whose work on lipoid nephrosis must rank as one of the great advances of recent years. For not only was this observer the first to describe fully the features characteristic of this disorder, but we owe very largely to him our present knowledge that high protein feeding is desirable in its treatment. Epstein's views are further remarkable in that he is almost alone in having put forward a plausible theory to explain œdema as a direct effect of a renal lesion. His view, if I have correctly understood him, is that the continued albuminuria causes such a depletion of albumin from the blood plasma that the normal proportion of albumin to globulin is eventually reversed. This brings about a lowering of the osmotic pressure in the circulating blood, and there is a consequent passage of water from the circulation to the tissues where the osmotic pressure is higher. Epstein's diet was specially chosen in an endeavour to replace as far as possible the albumin depletion by means of a generous supply of appropriate proteins in the food, and the frequent success of this diet lends apparent support to his theory of the mechanism of œdema. But in spite of its attractiveness this hypothesis has failed to convince the majority of the physiologists interested in the subject. It is clearly not possible to utilise such a theory to explain those types of œdema which follow starvation or faulty diet, or the œdema produced in inflammation and other pathological conditions, apart from circulatory failure, and it is perhaps on this account that the theory has found so little favour with the physiological school above referred to. Further, it is apparently difficult on the basis of this theory to explain the actual chemical composition of the œdema fluid; on the other hand, consideration of the writings of the pure physiological and pathological schools inclines one to the belief that they have perhaps not recognised the close association always encountered in clinical work in renal cases which exhibit both œdema and albuminuria.

When cases with cardiac œdema are carefully excluded, it is certainly very difficult to find a case of so-called renal œdema in which albuminuria is not a very marked feature, but I think that close inquiry amongst cases of nephritis in pregnancy and acute glomerulonephritis always leads to the discovery of an appreciable proportion of cases in whom the œdema is out of all proportion to the daily amount of albumin lost. If, on the other hand, we examine cases of pure lipoid nephrosis, it will, I think, be found that albuminuria may persist with a very high total daily loss of albumin at a time when the œdema is rapidly disappearing or almost absent, and if the theory of blood depletion and lower osmotic pressure were the explanation of the œdema, this should not be so. We are, therefore, once more confronted with an impasse, and must face the fact that the albuminuria, which is the one great index of a renal disturbance in cases of lipoid nephrosis, does not, on existing evidence, explain the œdema in these cases.

Certain Phenomena of Diuresis.

We can obtain some further information relevant to our problem by examining various methods by which diuresis can be promoted in these cases. For once polyuria can be established the œdema subsides, and the mechanism by which polyuria can be provoked should therefore throw indirect light on the mechanism by which the œdema is governed.

Of the diuretics which often act successfully in "renal" œdema there are at least three groups, which may be classed as follows: (*a*) urea and its precursors; (*b*) alkalis; and (*c*) acid-producing salts. In the first group must probably be included the high protein diets, and I related how, in the case described, urea in large doses was responsible for a rapid diuresis and reduction in the œdema.

In sharp contrast to this method must be placed that in which alkalis are employed. No discussion of œdema can in any way be complete without some reference to the school of thought which holds that acidosis is an important, if not an invariable, feature of œdema. M. H. Fischer may be quoted as one of the chief exponents of this view. His theory is largely based on experiments on frogs, and with colloidal substances such as gelatin. He believes that it is essentially the swelling of the tissue colloids under the influence of acid which is the main source of œdema in all cases. It would be impossible in the course of a single lecture to discuss the interesting views of this worker, which are frequently expressed in the vigorous language of an iconoclast. Fischer believes that alkalis are the essential basis for successful treatment in practically all cases of œdema and of nephritis, and very similar views, perhaps characterised by an equal enthusiasm, are to be found in the work of Osman in this country.

The advocates of alkalis—and I may claim to be numbered amongst them—have apparently never been lacking in enthusiasm, for I have been interested recently to read a seventeenth century work by Dr. William Coward, of this College, who was so enraged by the presumption of certain authors who had dared to belaud the use of acids in medicine that he published a volume entitled "Alcali Vindicatum," or, "The Acid Opiniator not guilty of Truth," in which his enthusiasm for alkalis led him so far as to cover with contempt a rival who had backed his favourable opinion of acids by the statement that "Seamen and Surgeons had been cured of the Scurvy be eating Oranges and Lemons in Spain," after their return. Ignorant both of the action of vitamins and of the effect of citrates on the reaction of the urine, Dr. Coward in an outburst of sarcasm wrote, "I love a Man who to make good his Cause tells half a Story and draws an Argument from a Tarpaulin to uphold a main point in Physick."

Reverting to the use of alkalis in nephritis, we must recognise that diuresis can frequently be induced by their use if the administration is pushed to a sufficient degree. Osman gives as much as grs. 1000 or grs. 2000 of alkali, in the form of potassium citrate,

potassium bicarbonate, sodium citrate, and sodium bicarbonate to many of his cases, and in spite of certain alarming accidents in the nature of tetany, it appears that his method has not infrequently been successful in cases of mixed nephritis of desperate character. On the other hand, we must not ignore the fact that diuresis in similarly desperate cases has sometimes been achieved by the use of calcium chloride. Blum and the Strasbourg school are chiefly responsible for this work. When calcium excretion is thus promoted, the sodium content of the urine increases also, as shown by Keith, Barrier, and Whelan, but the most interesting fact from the point of view of our immediate inquiry is that Salvesen and others have established that such calcium administration not only increases the urinary acidity but may actually cause a severe acidosis. We are, therefore, faced with the paradox that diuresis and improvement in the œdema of nephritic cases can apparently be brought about either by substances which render the urine alkaline, or by others which render the urine acid.

A possible explanation of this is afforded by the work of Stieglitz, who by means of indicator dyes has brought forward evidence that the reaction of the actual cells of the kidney is always the opposite of the reaction of the urine. And the same worker contends that any measure which tends to change the normal titre of the renal blood will act as a stimulus to the renal cells, and hence tend to produce diuresis. We must further note that following the work of Nash and Benedict there has been a tendency amongst biochemists to regard the breakdown of amino-acids into ammonia, which is one of the main protective mechanisms against excessive acidity of the blood, as brought about by the agency of the kidney, and not, as was formerly believed, by the liver. It is still too soon for any one to draw final conclusions from this mass of complicated observation, but it would seem to point to the conclusion that the work of the kidney in cases of œdema is directed to compensating an existing derangement of the normal blood chemistry, and though the strain of such compensation may damage the kidney the primary pathological process is an extra-renal one.

Experimental Œdema.

Turning now to the field of animal experiment, we find a series of failures which in sum seems to me to provide strong presumptive evidence against the theory that œdema is the result of damage to the kidneys. For as far as extirpation experiments are concerned, no one has succeeded in producing œdema by any operation on the kidney, and when we turn to the various poisons which on intravenous injection cause a chemical nephritis, we find that with a single exception none of them can produce œdema. The exception is uranium, and it appears that in animals poisoned by uranium a chemical nephritis and œdema can be produced if the water-intake is forcibly increased simultaneously. I have seen it stated that the œdema of uranium poisoning occurs even when the animals' kidneys have previously been removed; but as I have failed to find corroboration of the statement, I do not wish to stress it. I feel it not unfair, however, to point to the grossly artificial nature of these experiments, which must surely produce toxic effects on extra-renal tissues which may alone be sufficient to cause œdema, and that such is the case is the conclusion reached by many of those who have had most experience with this type of experimental work. It is impossible to read descriptions of these experiments, such as that to be found in the monograph of Loeb, without being impressed by the dissimilarity between such experimental œdema and that seen in pure lipoid nephrosis. And this work as a whole seems to me to support rather than challenge the belief that "renal" œdema is of extra-renal origin. The same conclusion is reached if we examine the interesting experiments recently devised by Aldrich and his associates, who have made prolonged study of the rate at which salt solution disappears after it has been injected into the skin of patients with various types of œdema. Without entering into details of their findings, it may be said that even in cases of so-called renal œdema they have found strong evidence of an abnormal avidity for water on the part of the tissues, both during and before the occurrence of the actual œdema.

Theories of Œdema.

Throughout this lecture I have made no attempt to explain the mechanisms by which the passage of fluid into the tissues, which we speak about as œdema, may be produced. No one, I think, who has given more than superficial attention to the enormous amount of work which has been done on this subject would presume to support any existing explanation of the facts with anything other than diffidence. Well-known treatises on the subject, such as the monograph by Loeb, or the work of Martin Fischer, tend to leave the reader in a state of confusion as great as that in which he may have begun his study of the subject, and we are, I think, forced to the conclusion that there is no theory of œdema before the medical world to-day which will explain all the known facts, but the theories which depend on the hypothesis that the œdema is a direct consequence of renal injury break down almost from the onset.

Elwyn, who must be quoted amongst those who have given particular attention to this subject, finds it impossible to do more than summarise existing facts, and put forward a tentative hypothesis to the effect that the œdema is a compensatory process. He believes that amongst the physiological constants of the body the blood volume is an important one—i.e., that in all circumstances, if life is to be maintained, the volume of the blood must remain constant. In cases of "renal" œdema, and of lipoid nephrosis as an outstanding example of such cases, he believes that reduction in urinary volume is the first compensatory mechanism to be brought into play and is directed to arrest the loss of albumin in the urine. From this he goes on to the belief that when this first great gateway of escape for the fluids from the circulation is partially closed, an increase in the blood volume would necessarily occur if some other gateway were not open. The only other avenue of escape for the fluid is into the tissues and thither it proceeds. This theory, as its author frankly says, is merely a statement of certain regulating mechanisms, and offers no explanation of the mechanisms by which the oliguria is produced or the transudation into the tissues brought about. Acceptance of it would seem to imply a change in the permeability of capillaries throughout the tissues, or, in other words, the existence of an extra-renal factor as a main factor in the production of so-called renal œdema.

General Conclusion.

I have now put before you the main reasons for my belief that *œdema in nephritis is at once suggestive of pathological change in tissues other than the kidney, and that such pathological change is not the result of nephritis, although it is more than probable that the renal and extra-renal damage have a common cause.* If this view is accepted, it seems to me to call for a fundamental change in our conception of the nature of nephritis, whenever that term is employed to describe a clinical association of œdema and albuminuria with or without hæmaturia, nitrogen retention, and cardiovascular changes. No one to-day would dream of regarding a case of acholuric jaundice, or of myelogenous leukæmia, as an example of splenic disease, and similarly I feel that the time has come when we must, at any rate in all cases where œdema is prominent, direct our attention first to the extra-renal tissues and search there for the factor that is the cause of pathological change of a very wide nature.

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(*Continued at foot of next page.*)

Lumleian Lectures
ON
EPILEPSY.

The Lumleian Lectures, 1928, delivered at the Royal College of Physicians of London

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LECTURE II.*

Delivered on March 27th, 1928.

THERE are several separately described diseases which have a close affinity with epilepsy; perhaps they are associated together clinically, or though not clinically associated the manifestations are very like or parallel to those of epilepsy; or they may arise under the same circumstances as does epilepsy. And the only successful treatment of some of them is that which is applicable to epilepsy. I submit that a metabolic dyscrasia is the causal factor of these several conditions, which are migraine, pyknolepsy, narcolepsy, vaso-vagal attacks, syncopal attacks, and tetany. Three of these are well known to occur, as does epilepsy, from local lesions of the brain, and these are migraine, narcolepsy, and tetany, and migraine is also met with in renal disease. There seem to be very good grounds for including these maladies in the same clinical and pathological group with epilepsy, of which some of them may be only varieties. I shall now put before you the relations between these maladies and epilepsy.

MIGRAINE.

Sometimes personal, but often hereditary and familial, this malady may appear in early childhood, or at any subsequent time, and tends to persist throughout life. The attacks are characteristically paroxysmal and often regularly periodic, and they often occur on waking in the morning, as if dependent upon some metabolic change which occurs more readily during sleep. In women they tend to cease during pregnancy. The occurrence of attacks of migraine in an epileptic person, though not very common, is of profound interest and importance. The epileptic attack may alternate in regular periods with the attack of migraine. A patient, migrainous during childhood, has lost the migraine at puberty with the development of epilepsy, and vice versa. Most remarkable of all are the cases first recorded by Gowers, in which epilepsy of many years' duration ceased and was replaced by attacks of migraine, which again lasted for many years and, with their disappearance, epileptic attacks again appeared. In these cases it was as if the attacks of migraine and of epilepsy were interchangeable and that they were of a similar nature and due to a similar cause.

The symptoms of migraine may be usefully and justly divided into two strictly separate groups, because one of these groups so often appears without the other; indeed, in some patients the two groups never appear together, and in others the symptomatology throughout life is confined to one group only. The first group is that of the hallucinations, paralyses, and mental states, and the second is that of the headache and vomiting. I maintain that a state of lowered blood pressure is always present with both groups. The symptoms of the first group almost exactly resemble the symptoms which occur in epilepsy, except in two notable points. The one is that they are so tardy in the onset and last for such a long time, in contradistinction to the flashing onset and short duration of the epileptic attack. The other point is that the migrainous attack is never associated with convulsion. The auras or hallucinations of migraine are the same phenomena as those of epilepsy, but they last minutes, or even hours, instead of fractions of a second, and therefore admit of better analysis and description by the patient. They are most often visual and common sensory auras and only rarely of an auditory, gustatory, or olfactory nature. The paralysis, aphasia, and mental states are in reality the same as in epilepsy, but they last longer.

The symptoms of the second group have their correspondents in less degree in the headache, vomiting, and vestibular disorientation which often follows the epileptic attack. In both migraine and epilepsy they seem to be the result of rapid increase of intracranial pressure from actual swelling of the brain. In migraine with headache there must be actual swelling of the brain to account for the headache and to account for the remarkable paralysis of the individual oculomotor nerves, which only occurs in attacks in which the headache has been unusually severe, and also for the sudden death which has been recorded in a few cases during an attack of ophthalmoplegic migraine. Recurring paralysis of the sixth nerve with each successive severe headache, the paralysis abating or disappearing in the interval between the attacks, can only be explained on a mechanical basis. The theory recently put forward that swelling of the pituitary body can account for the ophthalmoplegia and some other phenomena in migraine is, in my opinion, unthinkable, because of the distance and highly protected position of the sixth nerve. On the other hand, increased supratentorial pressure from local swelling of the brain with pushing backwards of the brain stem and stretching and pressure upon the sixth nerve at the foramen tentorii is an acceptable explanation, for it is in this way that sixth nerve palsy is so commonly caused in cases of cerebral tumour. Spitzer showed, in a series of autopsies upon subjects who had long suffered from migraine, that dilatation of the lateral ventricle upon one side was a constant feature, and he attributed migraine to intermittent occlusion of the foramen of Munro by a ball-valve action of a turgid choroid plexus. It seems to me more probable that swelling of one hemisphere from time to time would be quite likely to cause unilateral distension of the ventricle, just as a cerebral tumour often does. There is some evidence that actual swelling of the brain does occur in migraine with headache. I have already referred in my last lecture to a theory of epilepsy based upon

* Lecture I. appeared in THE LANCET of March 24th.

SOME PROBLEMS OF NEPHRITIS: REFERENCES.

(*Continued from previous page.*)

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anaphylactic reaction within the brain. I have a considerable number of cases in my records in which such conditions as asthma, paroxysmal swelling of the tongue, angio-neurotic œdema of other parts of the body, and urticaria occurred in patients with migraine, and this suggests the possibility that a local anaphylactic reaction within the brain, giving rise to local œdema and swelling, may be the cause of the headache in migraine and in epilepsy. It seems quite clear that the two groups of symptoms in migraine result from two distinct processes. The first group of epilepsy-like symptoms must result from some process which is nearly identical with that occurring in epilepsy; the second group of the headache and vomiting must result from local swelling of the brain. The two processes may coincide, producing the fully symptomatic attack of migraine. Much more commonly the second process occurs alone, so that migraine is best defined as paroxysmal headache. Often the two processes occur in the same patient, but never at the same time—the visual phenomena and the headaches constitute separate attacks. Sometimes the first group of symptoms is the sole manifestations of migraine throughout life.

A further close relation between migraine and epilepsy is that either condition may result from an organic lesion of the occipital lobe and that the visual hallucinations so occurring may be identical in character, and also that both conditions may arise in the course of renal disease. I have seen one excellent example of migraine from a lesion of the occipital lobe.

A middle-aged woman was admitted under my care into St. George's Hospital, her doctor having sent her to me as a case of cerebral tumour. She had a story of very typical migraine of three years' duration. I could find no sign whatever of any intracranial tumour, but we observed on several occasions very characteristic attacks of migraine with teichopsia and hemianopia. She was treated for migraine and the attacks ceased and did not recur during a peroid of about a year that she was under my observation. Some eighteen months later she became insane and was admitted to a mental hospital, where in a few months she died. Her doctor, who had never been satisfied with the turning down of his diagnosis of cerebral tumour, saw to it that an autopsy should be held, and thereafter took care that the pathological findings should be properly rubbed into me, for in the outer and under part of the occipital lobe corresponding to the original migrainous symptoms a cerebral tumour was indeed found.

Lastly, there are those rare cases, several of which are recorded by Gowers, in which the attacks seemed to be a blend of migraine and epilepsy or, alternatively, to be attacks of migraine in which severe convulsion occurred.

I submit that migraine may be considered as a protracted form of local epilepsy, having its seat of origin most often, but not always, in the posterior regions of the brain and having the especial association of swelling of the brain which gives rise to the conspicuous headache and vomiting. Migraine is usually regarded at the present day as dependent upon a metabolic dyscrasia, and its close similarities and relations with epilepsy are of some weight in the hypothesis that epilepsy has a similar origin.

NARCOLEPSY.

This remarkable condition was first noted by Westphal in 1877, and by Fischer in the following year, and was considered by them to be an unusual form of epilepsy. But Gelineau, in 1880, applied the name narcolepsy to his description of further cases, and considered that the condition was quite distinct from epilepsy. In English-speaking countries narcolepsy has been confused with all of the many conditions in which undue sleepiness and sleepy attacks occur, but in Germany this symptom-complex has been well recognised since Westphal first described it. An admirable monograph has recently appeared in *Brain* by Dr. Adie. This condition seems to persist with slight variations of intensity throughout life. It is more common in males. It seems to be personal and not hereditary, and the subjects present for the most a normal physical and mental make-up, but sometimes, as in epilepsy, there is mental deficiency, and there may be bodily peculiarities which have suggested endocrine deficiency.

Two quite different kinds of attack occur in nearly all the cases of narcolepsy. The one is the sudden onset of apparently normal sleep, which comes, usually at a moment of inattention, several times a day. The sleep lasts from a few seconds to a few minutes, it is rousable, and the patient is wide awake at once and knows that he has slept and sometimes he has dreamed and can describe the dream. Many patients have a warning of the attack in the way of a feeling of intense fatigue or a cephalic sensation and, thereafter, can so far repel the onset of the attack by an effort of will as to be able to sit down or get out of harm's way. But the attack is inevitable, however long it may be resisted, and is always the more severe the longer it is resisted. Some patients have headache after the attack. On occasion, however, the attacks may occur suddenly and without warning when attention is concentrated and in midst of action, and they were noticed under war conditions, during bombardments, and on listening-post duty, where the penalty for sleeping is death.

Instantaneous onsets of sleep in the midst of action are well-known phenomena in those who have been deprived of sleep for very long periods, and may be deemed almost normal phenomena under such circumstances when bodily metabolism must be seriously disturbed by the prolonged breaking of a fundamental physiological succession in life.

The second variety of attack is termed by Dr. Adie the "cataplectic" attack. It seems to be produced mostly from a sudden emotion, and this emotion may be of any kind, but it is most often a pleasurable emotion, and the most potent emotion is that which accompanies bursting into laughter. There is a sudden feeling of intense weakness in the limbs, which go flaccid. The patient drops anything that he may be holding and crumples to the ground, but often only into the sitting position. The eyelids drop and the head falls forward with the jaw dropped. There is complete inability to move and generally inability to speak, but consciousness is completely retained, so that the patient is able afterwards to recount every event and repeat every word spoken during the attack. Grimacing and protrusion of the tongue sometimes occur, as if there were some sort of facial spasm, and curious movements of the head may be seen, as if the patient were making partially successful attempts to keep his head upright and then failing; or similarly with the limbs. These movements have been regarded by some as convulsive movements, but from the clear description by one of Dr. Adie's patients, they were in his case due to repeated efforts to overcome an increasing weakness. The attacks last but a few moments or, at their longest, a few minutes, and recovery is almost abrupt. Often the patient has time to sit down or get to safety. Dr. Adie has shown very conclusively that in narcolepsy there is no fundamental distinction between the two varieties of attack. For the sudden attacks of sleep, usually without cause, may occur upon any emotion and the cataplectic attacks may occur spontaneously, and blends are met with in which cataplexy and sleep occur together.

In this connexion it is interesting to consider that hearty laughter is in all acceptation a "fit" of reflex origin, maintained by an impulse so strong as to often defy the control of the will. It completely interrupts the train of mental activity; and the hearty laugher collapses temporarily incapacitated from mental and bodily activity. In so many languages, too, there is an expression equivalent to our English, "to die of laughter," "to be paralysed by fear," and "to be speechless with rage." It would appear therefore that both the attacks of falling asleep and the cataplectic attacks of narcolepsy have their basis in a normal event, for we all fall asleep, and those of us who are risable may "die

of laughter," and that in narcolepsy we are not dealing with any qualitative change in the reaction of the human being to its surroundings, but rather with an exaggeration of and misplacement of events, that occur in the state we call normal. Following upon the brilliant researches of Pavlov upon the conditioned reflexes which prove clearly that sleep and internal inhibition are identical phenomena, Dr. Adie further correlates the tone-loss attacks and the sleep attacks of narcolepsy as phenomena of inhibition. He considers that this malady is a functional disorder of the nervous system, and that it is primarily a disorder of an endocrine nervous system made up of the nucleus hypophyseus and adjacent centres of the between-brain, and laying great emphasis upon the highly correct general principle that every expression of disordered cerebral activity from functional disturbance has a corresponding equivalent resulting from local organic disease of the brain, he proceeds to detail one case of his own and another recorded by Stiefler, in which true narcolepsy resulted practically as an isolated phenomenon from local organic disease of the brain, presumably in the subthalamic region.

In this short description of narcolepsy you will be struck by the parallelism between many of its signs and those of epilepsy, and by the fact that authority has advanced a metabolic disorder peculiar to the individual and, alternatively, a local lesion of the nervous system, and collectively, therefore, both of these conditions as the pathological explanation of the malady. And this is the same pathology which I am submitting to you as the explanation of epilepsy.

In Dr. Adie's monograph one is impressed by his contention for "true" narcolepsy, I presume in contradistinction to "false" narcolepsy, and I suspect that the latter collection would include those cases of narcolepsy which were in danger of showing epileptic phenomena. I cannot help feeling that there has been a little picking and choosing of the cases, and while I am sure, from my own observations, of the correctness of the clinical picture which he and others have drawn, and while I fully realise the immense value of the succinct and exact description of narcolepsy laid down by him in teaching the medical world how to recognise this malady, yet surely I have seen cases in which narcolepsy and epilepsy were conjoined, and I think that the observers of old time, from Westphal and Fischer onwards, were not all wrong when they classed some of the cases as epileptics. The arguments against the relation with epilepsy are not very strong. That it has no familial relation is met by the fact that epilepsy itself is so often a personal as opposed to a familial disease. That it does not occur before puberty agrees with the well-known class of the epilepsies which appear at puberty. That there is no convulsion in narcolepsy does not convince, for pyknolepsy was described as being without convulsion, and that is certainly an epilepsy proper. Moreover, the grimacing and protrusion of the tongue have not been either precisely described or explained by those who deny spasm in narcolepsy. When Adie states his determination that narcolepsy and epilepsy are not the same, because in narcolepsy some of the attacks are reactive, whereas in epilepsy the attacks are never reactive, I frankly object that it has been laid by great authorities, including Sir William Gowers, that the most frequent of all the tangible excitants of the epileptic fit is fright, and that I have seen many examples of this, such for instance as a lad who was a compositor's apprentice, who one day standing at work before his case, suddenly saw a train of great rats run from behind it across his bench. He threw his first fit there and then, and that same day, in my presence at the National Hospital, had two other severe and typical general attacks of epilepsy. Moreover, I do not see why the multitudinous records of reflex epilepsy from almost every possible form of stimulus, both psychic, special sensory, and sensory, and occurring indiscriminately in idiopathic epilepsy, organic epilepsy, and symptomatic epilepsy should be excluded from the class of attacks which are called "reactive."

It would seem, therefore, that narcolepsy is usually a malady per se, but that it is closely parallel with epilepsy in its mainfestations, and that it has a similar pathology in a metabolic dyscrasia and in local lesions of the nervous system, but that in some cases the nature of the metabolic change is such as to produce a coincidence of the two diseases in the same patient.

PYKNOLEPSY.

Friedmann, in 1906, separated from among the various forms of epilepsy a type which he deemed worthy of separate description. It was characterised by the somewhat fulminant onset in childhood of attacks indistinguishable from the minor attacks of epilepsy, which becoming very frequent and sometimes innumerable, persisted for years with an unvarying monotony of character, but were associated with no ill-health and with no impairment of mental or physical development. They were utterly uninfluenced by treatment and invariably came to a spontaneous end some time after puberty, never again to occur. Heilbronner and Stier confirmed his observations and named the condition "pyknolepsy" from the characteristic frequency of the attacks, and wished to separate the condition as entirely apart from epilepsy and a malady sui generis, and Dr. Adie has recently published an excellent monograph upon the subject. The attack in pyknolepsy is said to be always an inhibition of the higher psychical processes lasting from five to ten seconds; the power of speech and of voluntary movement is in abeyance, but the automatic movements are retained; the patient stands with the limbs relaxed, staring vacantly, but he never falls and never drops anything that he is holding; the lids may flicker, the eyeballs may roll upwards, but there are no convulsive movements and consciousness is never entirely lost. I have seen many cases of pyknolepsy which corresponded exactly to the type of Friedmann and Adie. I have seen many others which corresponded, except that each presented some feature which betrayed the presence of epilepsy. Thus I had one case whose sister had major epileptic attacks; another very typical in every way, but that he had had four severe general epileptic attacks; another who always fell in his attacks and, again, one who always had convulsion of the face and upper limbs. Yet these were all cases in which the attacks were multitudinous, in which high intelligence was preserved, which were rebellious to treatment, and which came to a spontaneous and permanent cure somewhere about the age of 20 years. One of my patients had to be removed from public school on account of the disturbance his innumerable attacks caused and was under my care at the National Hospital. During the period of his most frequent fits he matriculated and graduated as a Bachelor of Science. He has now had no attacks for years and is a master at a public school. Any physician who sees many cases of epilepsy will be able to pick out some which answer exactly to the description of pyknolepsy, but the number of cases which just fail to correspond because they show some typical feature which brands them as cases of epilepsy are so many that the contention that pyknolepsy is a disease sui generis and, apart from epilepsy, falls to the ground utterly. It is, in fact, simply a variety of epilepsy. I take it that variation in the nature of the metabolic disturbance which underlies epilepsy is responsible for type and the constancy of the phenomena which result. This description of pyknolepsy has, however, been very useful, for it has pointed out to the medical world that in epilepsy, provided that high intelligence be maintained and education be uninterrupted, though the attacks be very numerous over many years and though treatment be entirely futile, there is good hope of complete and lasting recovery.

Vaso-vagal Attacks.

These curious attacks which make up a very definite syndrome and which have an important bearing upon epilepsy and conditions related to epilepsy, were first written about by Bonnier in his treatise on Vertigo under the term "syndromes medullaire." Gowers was, I know, well conversant with the condition for many years before he published a lecture in THE LANCET in 1907, entitled Vagal and Vaso-vagal Attacks. This work does not seem to me to have received the attention in medical literature that its truth and importance merits.

The attacks were called vagal attacks because of the common occurrence of epigastric sensations of discomfort, of cardiac discomfort, and of respiratory restriction sometimes associated with an all-pervading impression of impending death, comparable to a mild degree of that which occurs in angina pectoris. They were called vasal because of the conspicuous pallor of the surface and coldness of the extremities. For these same reasons Bonnier called them "medullary syndromes." Gowers placed them on the borderland of epilepsy because some of his patients who had vaso-vagal attacks were frank epileptics and because of the change of mental state and semi-conscious condition during the attack. He placed them also close to migraine, as some of the patients also had migrainous attacks and because of the slow lasting aura, the prolonged symptoms, and the conspicuous surface pallor. He said: "If we can conceive a minor epileptic attack that is extended, its elements protracted so that the aura, the pallor, and the semi-consciousness last minutes or hours instead of fractions of a second, its features would be so different that its nature would not be suspected. Velocity is an essential element in the attack of ordinary epilepsy, but it does not preclude the possibility of deliberation in attacks not far removed from epilepsy." Gowers attributed the ashen pallor and the cold extremities to general vaso-constriction, as was fashionable in the pathology of his time, but I am convinced, as the result of many observations, that the pallor at the commencement of the epileptic attack and that seen in the vaso-vagal attack, the attack of migraine, and in the syncopal attack, are all due to the same cause, and that is a general fall in blood pressure. In the vaso-vagal attack one has plenty of time to accurately determine this fall of blood pressure.

I have seen many patients with vaso-vagal attacks, and in one of these I have observed the details of the attack from start to finish on at least 20 occasions. These have been so interesting and so highly important in connexion with my subject as to warrant my describing them to you in detail.

The patient is a lady of strenuous life and of athletic habits, with no family history of epilepsy or of migraine, but she has three times in her life fainted and fallen like a stone—once in childhood at the sight of an accident, once on the receipt of unexpected bad news, and once on being shown at her own request a pathological specimen in which she was greatly interested. The attacks never occur when she is feeling thoroughly well, but there is always a premonitory state of bodily ill-feeling and negative emotional tone. They begin abruptly with a general feeling of weakness of the limbs, soon followed by a general impairment of consciousness, which she calls a "stupid head," in which she cannot concentrate nor be very direct in her speech, and in which she is restless to the extent that she seems unable to sit or lie down, by which she means she knows well that the attack may be mitigated or aborted. She can, by a strenuous effort, delay the development of the attack so that she can get home or into a shop when walking in the street, but such delay seems always to increase the severity of the attack. The skin becomes increasingly pale and ashen and the extremities become very cold. Then there is a feeling of restriction of respiration referred to the lower chest. It is never painful nor associated with any fear of death, but the patient will clutch at the lower chest and say that she has difficulty of breathing, but there is no dyspnœa. At this stage the blood pressure falls further and somewhat rapidly, but there is no increase in the pulse-rate, which is somewhat remarkable. Hearing becomes increasingly distant and vision pales, and consciousness is lost somewhat suddenly and so completely that this patient has fallen downstairs with considerable bruising without any after memory or with the sole residuum that she heard herself fall but felt nothing. Consciousness is usually lost for a few seconds only, but in severe attacks it may be lost for as long as a minute, and in this case there is always convulsion. It is of a clonic type and commences, and is most conspicuous, in the face, and spreads thence to the neck and arms, but never to the trunk or legs. It lasts a few seconds. Consciousness is regained slowly and this is never followed by sleep. There is no enuresis. There is no consequent headache, but the patient is somewhat knocked out and has a stupid head and complete anorexia for the rest of the day. There is much coldness and shivering as the attacks pass off. These attacks may abort and the symptoms may cease at any stage of their development. The shortest will last a quarter of an hour and, in the longer attacks, it may be from an hour to several hours before consciousness is lost. They commenced about the age of 22 years and were numerous between the ages of 25 and 30 years, two having occurred in one day and often several a week. Now, in later life, they are very rare and occur only at intervals of years.

This story shows a good example of the vaso-vagal attack, but it is specially important in demonstrating the occurrence of convulsion in many of the attacks which did not occur in Gowers's cases, and this convulsion brings the condition very near to epilepsy. The picture of this case will at once bring forcibly to your minds Gowers's simile of a very long-drawn-out minor attack. There is also a very close resemblance between such attacks and migrainous attacks. For if you take away the headache and the vomiting and the visual symptoms from a severe attack of migraine, you will leave the low blood pressure, the ashen countenance, the bodily coldness, the mental and physical disability, and the absolute anorexia which characterise many vaso-vagal attacks.

When the patient I have just described to you was nearing the deeper stages of a severe attack, someone came into the room who had considerable experience of epilepsy, and he witnessed the convulsion and slow return to consciousness, and he told me forcibly that I was deceiving myself in not calling such an attack frank epilepsy because the patient was a close relative of my own. But I know that vaso-vagal attacks are not epileptic attacks, though like the attacks of migraine and narcolepsy, they may mix clinically with epilepsy and are amenable to the same medicinal treatment, and we shall do well to follow Gowers and to class them as distinct but belonging to the same clinical and the same pathological group.

Syncopal Attacks.

I have often thought deeply why fainting attacks have been so stringently separated as having no relation with epilepsy, and I suppose it is because the lowering of blood pressure is slow enough and prolonged enough to be so obvious, and because the syncopal attack so often appears as an affective reaction to some very definite though often trivial cause. When one considers the distinction which authoritative writers have made between epileptic and syncopal attacks, one finds the argument strained and hard to accept and the distinctions neither absolute nor applicable to many of the cases. I hold very strongly that the syncopal attack is not an epileptic attack, but I am convinced that it is a phenomenon of the same order and dependent upon a similar pathology and that it should be classified in the same group with epilepsy, migraine, narcolepsy, and vaso-vagal attacks.

The syncopal attack has a smaller incidence upon the population than has epilepsy, and in those who suffer, syncopal attacks are for the most much more rare events than are epileptic attacks in epileptic persons. They are usually personal, but they may be familial and hereditary. They do not commonly commence in childhood, but often more after puberty and, like the attacks of epilepsy and of migraine, they tend to persist during the whole of life, but to become rare as age becomes advanced. The onset may be quite sudden and the return to consciousness rapid; more often the onset is slow with obvious signs and symptoms of the lowering blood pressure before consciousness is lost and consciousness returns through a period of dazedness. As I have myself

witnessed the instantaneous attack and the slow attack occur in the same patient, confusion with minor epilepsy is here unlikely. Surely, whether the attack is rapid and very short, or whether it is slow and longer, will depend upon how rapidly the blood pressure falls and how quickly it regains the normal. As this rate of onset and recovery is one of the few actual points in the attack which are held to distinguish epileptic from syncopal attacks, the impossibility in thus separating the two conditions becomes apparent. Another point is that the syncopal attack is so often an affection reaction from a mental impression, from fear or horror, from the sight of blood, or from a stuffy atmosphere, but sometimes the syncopal attack has no tangible cause whatever and, further, the epileptic attack may be an affective reaction, the narcoleptic attack is usually so, and the migrainous and vaso-vagal attacks may, on occasion, be thus produced. This distinction, therefore, will not serve, and one has to make a diagnosis rather from the course of the case than from the nature of the attack. What has never been explained is why in some persons, who are otherwise healthy and normal, should there be this tendency to sudden fall of blood pressure with loss of consciousness, either spontaneously or as an affective reaction from causes which are utterly ineffective in producing like phenomena in the majority of the community. I submit that those otherwise healthy people who are subject to syncopal attacks have a personal metabolic peculiarity not far removed from that which I have suggested to you may be the underlying factor in epilepsy, narcolepsy, vaso-vagal attacks, and migraine. I submit that the fall of blood pressure so conspicuous in the syncopal attack is an essential element in all the others, and this, with the clinical similarities between these maladies, binds them together into one group.

Convulsion in Syncopal Attacks.

I wish now to draw your attention to the occurrence of convulsion in syncopal attacks. It is much more common than is usually allowed. Kussmaul and Tenner first proved that anæmia of the brain from any cause, including lowering of the blood pressure, might result in general convulsion. Forensic medicine experts have always allowed convulsion in syncopal attacks. Physicians have usually dismissed convulsion in their description of syncopal attacks with the remark that there may be a few twitchings of the muscles of the face, and have made the occurrence of distinct convulsion the standard of separation between the syncopal and the epileptic attack. Dr. Sutherland has recently said very definitely that whenever the blood pressure drops suddenly to below a certain point there must be convulsion. He was referring to the explanation of convulsion as it occurs in the Stokes-Adams syndrome and in paroxysmal tachycardia, and he dismisses such convulsion as having no connexion with epilepsy, but as the simple effect of dropping of the blood pressure, and he denies any justification of the term "cardiac epilepsy." He does not, however, account for the fact that only a few of the cases of heart-block, even with very long asystolic periods, have convulsions, and that this phenomenon is rare even with the most severe cases of paroxysmal tachycardia. Further, in cases of heart-block, I have seen frequently recurring minor attacks which were characteristically epileptic and which had never occurred before the heart-block developed. I have seen also local attacks and the usual convulsive attacks confined to face and upper extremities, and slow-drawn-out attacks like vaso-vagal attacks and severe general convulsions, and therefore I submit that there is a second metabolic epileptic factor which determines the occurrence of epileptic manifestations in these cardiac cases.

Alcohol Puncture and Syncopal Attacks.

In the performance of alcohol puncture for the relief of neuralgia, peripheral facial spasm, and painful periosteal points I have on at least 20 occasions observed syncopal attacks, and in every case these were associated with convulsion, commencing with deviation of the eyes and a gurgling sound in the throat and followed by facial clonic spasm, often spreading to the arms and sometimes becoming general and occasionally severe. The attacks commenced with the usual facial pallor and nausea, and complaint on the part of the patient that he felt faint, the convulsion lasted perhaps half a minute and recovery was rapid and complete. All the patients were men who seemed otherwise healthy. The attacks seemed to have no relation to the pain or discomfort of the procedure nor to the amount of local anæsthetic or of alcohol used; indeed, I have seen them most often in injections upon the facial nerve, where the amount of either used would be less than five minims. Curiously enough, I have never seen a syncopal attack to occur in cases where a successful puncture into the Gasserian ganglion has been made and where both the pain and the shock effect might be deemed to have been greatest. Another physician, who has great experience of alcohol injections, tells me that he has observed similar syncopal attacks with convulsions in needling operations where no local anæsthetic nor alcohol have been used, as for, in example, in lumbar and cervical puncture.

These attacks which I have just described were obvious syncopal attacks and they were associated with convulsion in no way distinguishable from that of the epileptic attack. They occurred in a very small percentage of the subjects operated upon, and I submit that their occurrence was determined by a personal metabolic condition of the patient at the time which is not far removed from the underlying cause of epilepsy.

TETANY.

The association of epileptic manifestations with those of tetany, though they may be rare, are of importance in the argument that epilepsy has its origin in a metabolic dyscrasia, for tetany is provedly the result of metabolic disturbance, for it can be produced by calcium deprivation and by parathyroid extirpation, and removed thereafter by calcium administration and by parathyroid feeding. In rare instances it may appear as the result of a local lesion of the brain, and there are a few cases recorded in which both epilepsy and tetany resulted from a local lesion of the brain. Tetany has been often associated with the convulsions of childhood. In the clinical descriptions of tetany in its severe form Gowers calls attention to the occurrence of general convulsions of an epileptic order, and von Fraenkel Hochwart fully confirms this. Further, Gowers records the occurrence of tetany in association with vaso-vagal attacks. On the other hand, it is well known that the sudden onset of general tetany is usually associated with sudden loss of consciousness, as is the general epileptic attack. I wish to put before you two cases which will serve to illustrate this subject.

A woman well past middle age was admitted under my care at the Queen-square Hospital as an epileptic, on the grounds that she had for three years suffered from attacks in which she lost consciousness and fell and was generally convulsed, and thereafter experienced great pain and stiffness in her limbs. Immediately after admission she had an attack which was typical tetany in the four limbs, and it was discovered that a very complete thyroidectomy had been performed rather more than three years previously. She presented no symptoms of myxœdema. She had no general convulsion in hospital, but in one severe attack of tetany consciousness seemed to be greatly impaired or even lost. This case recovered rapidly upon calcium and parathyroid treatment.

A middle-aged woman came to my out-patient department at Queen-square with all the signs of tetany well marked, but with no obvious cause for these. I was busy for some time demonstrating so instructive a case to my class and admitted the patient into hospital without examining the retinæ. I was informed later in the afternoon that she had intense papilloedema. We were unable for some time to make any localisation for the tumour, but later slight nerve deafness appeared on one side, and the patient's condition

being urgent, a lateral recess tumour attached to the auditory nerve was exposed and removed. We were much troubled with the non-subsidence of the papilœdema and the other symptoms for a while, and by mental aberration, but these were obviously due to a hydrocephalic cystation from tissue dislocation, which righted eventually with a complete recovery of sight of mentality and of the tetany.

I hope that I have in some degree attained my object in bringing before you in this lecture a real relation, both clinical and pathological, between epilepsy and these several other diseases.

RHEUMATISM, TONSILS, AND GLANDS.

AN INQUIRY INTO THE RELATION OF TONSILS AND ENLARGED GLANDS TO CARDIAC DISEASE IN RHEUMATIC CHILDREN.

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DURING recent years many papers have been published on the subject of rheumatism, and many writers have produced statistics in an attempt to assess the importance and results of removal of the tonsils. Some of the figures seem to suggest that the tonsil is of small importance, and its removal of no great use; others suggest the contrary. It was because of this apparent uncertainty that we have tried to follow up cases of chorea and rheumatism during a period of six years, to re-examine them, and to produce figures showing the relationship between the tonsil and cardiac disease in rheumatic children. The cases under consideration were all children under the age of 12 years admitted to the wards of the Children's Hospital, Birmingham, under one of us (K. D. W.) between Jan. 1st, 1921, and Jan. 1st, 1927. All the in-patient cases of rheumatism and chorea are included, and of necessity these comprise the more severe types seen during this period, because, owing to lack of beds, only children whose symptoms are urgent gain admittance to the hospital. The death-rate in the series under consideration reflects the severity of the infection. Approximately half the children had their tonsils removed while in hospital.

Out of a total of 153 cases, 15 died in hospital, leaving 138 whom we attempted to follow up; and of these, 71 were re-examined and 9 were found to have died since discharge from hospital. Among the remainder (58), classified as untraced, there were several children who are known to be in convalescent homes or institutions, where they could not be re-examined; these have been excluded from our figures.

The traced cases have been divided into three groups:—

1. *Normal*, which includes only cases who show no evidence of any cardiac abnormality or disability.
2. *Damaged*, including cases showing some evidence of cardiac abnormality, such as slight or doubtful enlargement, extrasystoles, or a systolic apical murmur without any definite evidence of valvular or myocardial disease. A number of cases in this group showed only a persistent tachycardia.
3. *Cardiacs*, comprising all cases with definite enlargement or valvular disease, and all cases with myocardial damage. Several of this group have no symptoms and state that they enjoy normal good health.

In this paper the state of the heart has been taken as a measure of the damage wrought by rheumatism, partly because it was considered the most definite and reliable index, and partly because alternative details such as height, weight, and general health would be liable to grave inaccuracy unless checked by comparison with a similar number of normal children drawn from the same population. This method of control proved impracticable. It was found impossible to indicate accurately either the severity of the original disease, or the degree of recovery. Children who, on admission to hospital, had such extremely severe pancarditis that they seemed almost certain to succumb to heart failure, have made good recoveries and lead active lives, while, on the other hand, some who did not seem likely to become victims of permanent cardiac disease have since developed organic lesions.

TABLE I.

Traced cases: males, 26; females, 54 = 80.

Original disease	Chorea, 28.	Rheumatism, 52.
Present state.	Number and percentage.	Number and Percentage.
Heart normal	15 (53·5)	12 (23·07)
,, damaged	10 (35·7)	10 (19·2)
Cardiacs	3 (10·8)	21 (40·38)
Dead	0	9 (17·35)

Table I. shows that chorea is very definitely less likely to be followed by cardiac disease than is frank rheumatism. This accords with common experience. It also shows the large number of girls affected, and demonstrates that rheumatism in its severe form is nearly twice as common as severe chorea. Those children who had both chorea and rheumatism have been placed in the rheumatic group.

Beneficial Effects of Tonsillectomy.

It is our present practice to regard all tonsils as suspicious foci of infection in rheumatism, and to view enlargement of the glands at the angle of the jaw as a definite sign of infection of the lymphatic system via the tonsils, and as an absolute indication for their early removal whatever their size or appearance. During the period under review, however, enlarged tonsils only were removed.

At first the operation was approached with some misgiving because it was feared that such a disturbance might upset the patient severely; but experience proved reassuring, and suggested that the operation might be performed early with beneficial results, so that it is now our practice to remove tonsils as early as possible, even in the presence of acute chorea or with symptoms of severe rheumatic infection, provided that signs of heart failure are absent. This practice seems to be justified by results, for it is unusual to find any disturbance, and exceptional to be able to tell the day of operation from inspection of the temperature chart, while the patients often show a definite improvement in symptoms, appetite, and condition soon after.

Tonsillectomy was done in 35 cases of the above series, in 9 children with chorea and 26 with rheumatism. Thus, the more severe cases were more frequently operated upon.

TABLE II.

Present state.	Tonsillectomy: 35 cases.		Non-tonsillectomy: 45 cases.	
	Number and percentage.		Number and percentage.	
Heart normal	15 (42·8)		12 (26·7)	
,, damaged ..	8 (22·8)	48·5	12 (26·7)	60
Cardiacs	9 (25·7)		15 (33·3)	
Dead	3 (8·7)		6 (13·3)	

Table II. seems to show quite definitely the beneficial effect of the removal of the tonsils, for although the operation was performed more often in the rheumatic group—the severe infection which tends to damage some 60 per cent.—yet the cases operated upon show a decidedly smaller incidence of cardiac disease than the unoperated. The higher death-rate in the unoperated cases must, to a certain extent,

be discounted as being due in part to the fact that some children were admitted to hospital far too ill for any operative proceeding, and died without improving. In order to reach any conclusion as to the ultimate results of tonsillectomy, the deaths should be discarded and only the 71 cases re-examined should be considered.

Table III. shows the cases rearranged in two main groups—32 cases without tonsils contrasted with 39 cases with tonsils—and in further sub-groups to bring out the effect of the presence of enlarged glands.

TABLE III.

Present heart condition ..	Normal.	Damaged.	Cardiac.	Totals.
Present throat condition—				
Tonsils but no glands ..	5	2	2	9
,, and glands ..	6	9	15	30
Glands but no tonsils ..	1	2	1	4
No tonsils, no glands ..	15	7	6	28
Totals	27	20	24	71

It can thus be seen that of operated cases only 4 out of 28, or 14·3 per cent., show enlargement of the glands at the angle of the jaw, while 30 out of 39, or 71·7 per cent. of the unoperated cases show enlargement. The significance of the figures is emphasised when the results are shown as percentages, as in Tables IV. and V.

TABLE IV.—*Rheumatic Children.*

Heart condition.	Healthy throats.	Tonsils and glands.
	Number and percentage.	Number and percentage.
Normal (27 cases) ..	20 (74)	6 (20)
Damaged (20 cases) ..	9 (45)	9 (45)
Diseased (24 cases) ..	8 (33)	15 (62·5)

TABLE V.

Throat condition.	Normal hearts.	Damaged hearts.	Diseased hearts.
	Number and percentage.	Number and percentage.	Number and percentage.
Normal (37 cases) ..	20 (54)	9 (24·3)	8 (21·7)
Tonsils and glands enlarged (30 cases)	6 (20)	9 (30)	15 (50)

It may be urged that the numbers under consideration are too small to allow of any definite conclusion, but the results of the analysis of the figures in the table are so striking that it seems difficult to avoid the inference that the tonsils, and especially tonsils associated with enlarged glands at the angle of the jaw, have an important bearing in rheumatic infection.

There are two further considerations which suggest that the glandular enlargement is of some importance in children and young people. While chronic tonsillar infection in them is very frequently accompanied by enlarged glands, this association is relatively seldom seen in adults. Further, in children who die of acute rheumatic heart disease the enlargement of bronchial and mediastinal glands is always a marked feature of the post-mortem findings. The glands are not very big, but all of them are somewhat enlarged, so that they are far more obvious than in children who have died of other conditions.

The children who form the subject of this communication were treated, as far as was possible, uniformly. Prolonged rest was considered of first importance, the child being kept flat in bed with only a low pillow, and as quiet as possible. At first all children were fed by a nurse, and allowed to make no unnecessary effort. Salicylates were given during fever and when any articular signs were present, but cod-liver oil is thought to be more useful when the temperature has settled down. The diet was in all cases confined to milk, milk foods, and jellies at first; a simple, well-prepared, varied diet being allowed later. Sunlight, open air, and good general conditions were found to be important factors, but the children who did best were those with devoted mothers, not necessarily in the best circumstances, who conscientiously carried out the directions for treatment after the child left hospital. The return to activity was gradual and was controlled by observation of the pulse-rate before and after any effort. The average stay in hospital was slightly over three months, but many children spent long periods in convalescent homes in addition, and the total period of rest probably averaged over six months.

Conclusions.

1. Chronic infection of the tonsils is commonly associated with rheumatism and chorea in children, and frequently causes enlargement of the glands at the angle of the jaw.

2. Children who have rheumatism are less likely to develop organic cardiac disease if the tonsils are completely removed.

3. In such children tonsillectomy results in the disappearance of the enlarged glands in over 70 per cent. of cases.

4. While the enlargement of the glands may be taken as an absolute indication for the removal of the tonsils in rheumatic children, it is probable that, in order to obtain the best possible cardiac results, tonsillectomy ought to be performed before the glands become enlarged.

SIGNS BY WHICH TO DIAGNOSE CONGENITAL DISLOCATION OF THE HIP.

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THE treatment of congenital dislocation of the hip-joint results in a complete cure if reduction is made early enough. If treatment is commenced before the age of 3 the percentage of cures reaches 75, and every additional month after that age diminishes the likelihood of a perfect result. In the older patient it is not so much the difficulty of reduction that impairs the result as the secondary changes in the acetabulum and the head of the femur, which conduce to chronic arthritis and premature old age of the joint. That early reduction is essential is well known, and yet few patients with congenital dislocation of tne hip reach hospital before the age of 3, and very few of these are sent up with the correct diagnosis. The majority of them have been examined at some time or other by their family physician, who has failed to diagnose the presence of a dislocated hip.

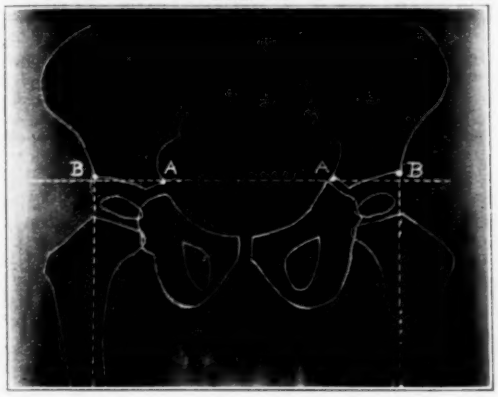
When to Suspect the Presence of a Congenital Dislocation of the Hip-joint.

The first thing to search for is something which will draw attention to the hip-joint, just as earache attracts attention to the ear. This something is late walking. Any child who is not walking at the age of 18 months, or who did not walk until some time after that date, should be suspected of having a congenital dislocation of the hip-joint, and the hip-joint should be examined.

The classical signs of a congenital dislocation depend on palpation; the head of the femur cannot be found in its normal place in Scarpa's triangle, but can be felt on the dorsum of the ilium.

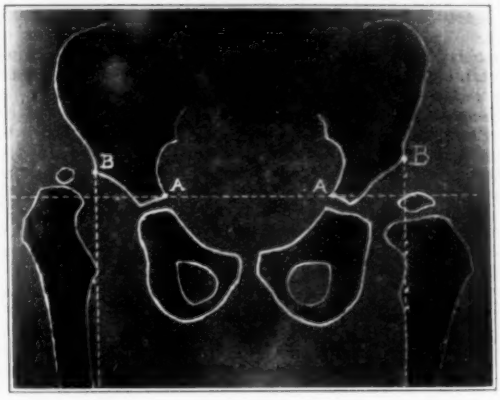
Palpation of the head of the femur in a baby is difficult, even when the child is docile, and I submit

FIG. 1.



X ray silhouette of the pelvic girdle in a normal child (adult male type).

FIG. 2.



X ray silhouette of the pelvic girdle in a child with congenital dislocation of the hip (adult female type).

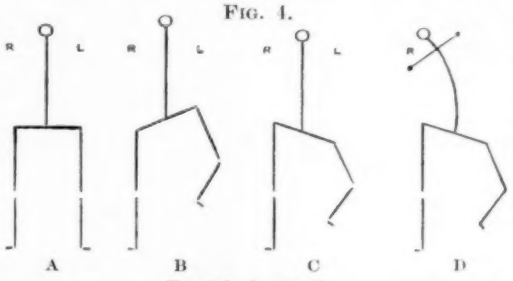
that the diagnosis can be made and ought to be made with certainty by inspection alone. Inspection will reveal three characteristic features: (1) the female profile; (2) dipping of the shoulder when the child walks; (3) shortening of the thigh.

The female profile.—If a normal child is placed flat on the couch, supine and the lateral outlines of the trunk and legs are observed from above, its outline or profile resembles that of an adult male (Fig. 1). In the child with a congenital dislocation of the hip the outline approximates to that of an adult female (Figs. 2 and 3). Fig. 1 shows the X rays of a normal child, a boy aged 2; it has been taken with a soft tube, so that the soft parts as well as the bones are visible. Fig. 2 shows the X rays, taken in a similar manner, of a boy aged 1 year and 10 months with a congenital dislocation on the right side and a subluxation on the left. The difference in the outline of the body is clearly shown; it is most obvious on the waist line. There is an adult female profile on both sides in Fig. 2 and in Fig. 3. The trochanter, being further from the midline, gives the appearance of an increase in the width of the pelvis and the presence of a waist.

FIG. 3.

Photograph showing hip outline resembling that of adult female.

FIG. 4.



Trendelenburg gait.

Dipping of the shoulder when the child walks.—If the child has commenced walking, the mother will often volunteer the statement that the child has always had a painless limp. This is not really a limp, but a pecularity of gait which is hard to define. It consists of a swaying of the trunk towards the affected side whenever weight is borne on the affected leg. If the doctor concentrates his attention on the legs he will not observe the limp at all; if he watches the point of the shoulders the sideways sway of the trunk becomes apparent, because the shoulder dips down on the affected side when weight is borne on that leg. When the dislocation is bilateral the sway is first to one side and then to the other. The gait then becomes "rolling" and more obvious. When the normal individual takes one leg off the ground, say the left, and balances on the other, the weight of the trunk would naturally depress the pelvis on the left side because the supporting leg is not directly under the line of the body-weight. To prevent this, the muscles of the right hip-joint contract strongly and tilt the pelvis down on the right side. This is the normal (Fig. 4 B). If for any reason the abductor muscles lose their power they cannot tilt the pelvis down on the right side, and the body-weight causes the pelvis to tilt down on the left (Fig. 4 C); then the patient, to prevent himself from falling sideways to the left, throws his trunk over to the right, so that the line of the body-weight passes down through

FIG. 5.

Method of demonstrating the shortening of the thigh in unilateral dislocation.

the supporting leg (Fig. 4 D.). It is this tilt of the trunk towards the affected side when the affected leg is bearing weight that gives rise to the characteristic gait. In a congenital dislocation the abductor muscles, although powerful, are ineffectual, because they lack the fulcrum which normally is supplied by the head of the femur fitting into the acetabulum.

Shortening of the thigh.—In a unilateral dislocation the leg is always short, and the shortening can be made apparent without a tape measure. If the examiner takes hold of the legs of the recumbent child, one in either hand, flexes the knees fully then flexes the hips through 90 degrees so that the femurs are vertical, and approximates the two legs so that the feet are flat on the table and keeps them square with the trunk, he will see that the knee on the normal side projects upwards half an inch or so beyond the knee of the affected side (Fig. 5). This is any easy method of demonstrating shortening of the thigh. For a bilateral dislocation the test is of no value. The sign only demonstrates that one leg is shorter than the other and that the shortening is somewhere above the knee-joint, but for practical purposes it nearly always means in the young child a unilateral dislocation of the hip-joint.

These three signs, depending on inspection only, are sufficient in themselves to warrant a diagnosis of congenital dislocation of the hip-joint.

How to Confirm the Diagnosis by X Rays.

The X rays confirm the diagnosis, but the normal radiographic appearance of the pelvis and hip-joints in very young children is not well known. It is as well, therefore, to have some simple guide by which one can tell at a glance whether the head of the femur is in its normal place. (See Figs. 1 and 2.) Draw a horizontal line joining A to A; A is the innermost part of the ilium at the Y-shaped cartilage of the acetabulum. The bony nucleus of the head of the femur, as seen in the radiogram, should be below this line. Draw a vertical line from B, the anterior inferior spine (which is the prominent outer lower angle of the ilium as seen on the radiogram), cutting the horizontal line at right angles. The bony nucleus of the head of the femur should be internal to this line. These two lines will show whether the head of the femur is further up or further out than it should be. I have studied tnis in numerous X rays of normal pelves of children under the age of 4, and I have never seen the bony nucleus of the head of the femur above the horizontal line, although occasionally the vertical line may just cut into it. These two lines enable one to gauge whether a reduction is complete, and also point out the minor degrees of subluxation which are so common.

The purpose of this short communication is to draw attention to the fact that congenital dislocation of the hip-joint is not diagnosed early enough because the general practitioner does not know how to make the diagnosis. I submit that he should be able to diagnose the condition with certainty, by inspection only, if he makes use of the three signs enumerated above—namely, the female profile, the dipping shoulder, and the shortening of the thigh.

DONATIONS AND BEQUESTS.—Among other bequests the late Mr. Edwin Pope, of Mentone Lodge, Dorchester, left £5000 to the Dorset County Hospital, Dorchester, upon trust for investment and to apply the income in some distinctive charitable purpose in connexion with that institution.—Mr. Charles McLaren, of St. Anne's-on-Sea, Lancs, left £500 to the Oldham Royal Infirmary.—The University of Leeds has received a non-recurrent grant of £10,000 from the University Grants Committee to help the University to take in hand, with as little delay as possible, the purchase, extension, and equipment of the new premises for a men's hall of residence.—Mrs. Alice Mary Burnside, of Tollerton Hall, Notts, left £2000 to the Nottingham General Hospital to endow a bed or beds in the names of her husband and herself, £2000 to the Nottingham Children's Hospital for a similar purpose, £1000 to the Nottingham General Dispensary, £500 to the Nottingham and Midland Eye Infirmary, £500 to the Midland Orphanage for Girls, Nottingham, and £500 to the Gordon Memorial Homes for Destitute Boys.

Clinical and Laboratory Notes.

A CASE OF POLYDACTYLISM IN TWINS.

BY H. C. CRAVEN VEITCH, M.R.C.S. ENG.,
HON. SURGEON, HUNTINGDON COUNTY HOSPITAL.

TWINS both exhibiting polydactylism are, I believe, sufficiently rare to justify the report of the following case.

A healthy young woman of 25 gave birth to twin sons at her first labour. Not content with this munificence she had given to each twin six toes on each foot and one well-formed supernumerary finger, whilst one had also the rudiments of a second supernumerary finger.

X ray examination showed the condition to be as follows. A. B., the first twin, had upon his right hand two little fingers. The proximal phalanx was double and fused and from the interphalangeal joint two perfect and separate fingers grew. Each foot had six perfect toes, the little toe in each case being the supernumerary one. On the right side the metatarsal bone was Y-shaped and with each branch of the Y a toe articulated. The left side was slightly different; here the metatarsal was not definitely bifid, but was somewhat stout throughout, and at its distal extremity was expanded rather like the upper end of the manubrium sterni, with a perfect toe articulating with each side of the expansion. Except for the unnatural breadth of the foot the appearance was quite normal unless one counted the digits.

The second twin, B. C., had upon his left hand a supernumerary little finger, of which the bones were all perfect, the proximal phalanx articulating with the mesial side of the head of the fifth metacarpal. This finger was webbed to the first interphalangeal joint and protruded at an angle of 60° to the normal little finger. Upon the right hand, just above the metacarpophalangeal joint, was what looked like a small smooth wart. The mother told me that during the puerperium she noticed a small pedunculated tag of tissue hanging from this and that, thinking it of no importance, she snipped it off with scissors and was rather alarmed when it bled somewhat freely. This I take to be the bud of yet another finger. The feet present precisely the same condition as in A. B., with the exception that the sides are reversed, the Y-shaped metatarsal being on the left side.

The twins are now 20 months old and I have just removed the supernumerary fingers, as it seemed likely that they would be in the way and a nuisance as the children grew older. I am still undecided about the feet. There has been no case of polydactylism in the mother's family, but the father had one brother who was born with a supernumerary thumb. His mother had never heard of any previous case in either her family or that of her husband.

A NOTE ON THE TRENDELENBURG POSITION.

BY R. OGIER WARD, M.CH. OXF., F.R.C.S. ENG.,
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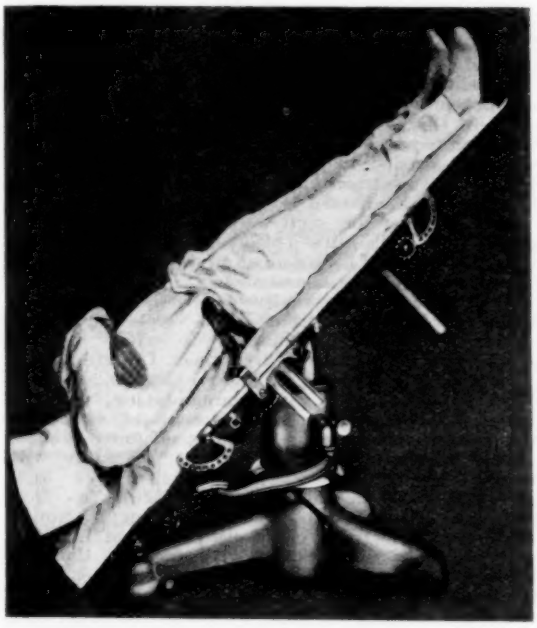
THE accompanying illustration shows a subject maintained on the operation table in the Trendelenburg position by means of supports which fit against the iliac crests, thus holding the entire weight of the patient by fixing the bony pelvis. It will be noticed that, although the table is tilted to the fullest extent, no shoulder-rests are used, nor are the knees flexed.

On first principles this is clearly the best way to support a patient. But I was led to adopt this method and to design these pelvis supports which were made for me by Messrs. Allen and Hanbury, because I have seen several patients who have suffered from a partial palsy of the ulnar nerves, following operations conducted in the Trendelenburg position. They have all been elderly men operated upon for diseases of the prostate and bladder. The usual sequence of events has been that, on recovery from

the immediate effects of the operation, they have noticed a numbness of the hands and forearm, precisely confined to the distribution of the ulnar nerves. This has in several cases persisted for two or three months, but so far as I know has always ultimately cleared up; there has never been motor palsy, but only numbness and impaired sensation. It is probable that many surgeons and anæsthetists have met with examples of this trouble. The explanation of it is, I believe, as follows.

If shoulder-rests are used, the patient's shoulder-girdle is firmly fixed. When the operation table is tilted the weight of the body forces the upper part of the thorax, which is, of course, conical in form,



Patient in the Trendelenburg position, showing supports.

into the shoulder-girdle. As a result of this, the last cords of the brachial plexus, consisting of the eighth cervical and first dorsal nerves, are compressed against the first ribs and thus may be damaged.

It will be seen that this condition cannot be avoided by placing padding over the shoulders, for if the damage was done by the direct pressure of the shoulder-rests upon the brachial plexus, then the lesion produced would be one affecting the upper cords—namely, the fifth, sixth, and seventh cervical nerves, injury to which would produce a palsy of the Erb type. I do not think that this has ever been recorded, whereas, in my experience, the injury has always been definitely confined to branches of the eighth cervical and first dorsal nerves.

There is a further advantage to be gained by supporting the patient through the bony pelvis—namely, that the respiratory movements of the upper thorax are in no way restricted. And this must surely be very desirable, especially when a very extreme Trendelenburg position is used as, for example, in some gynæcological operations. The patient is thus elevated in order to empty the lower part of the abdomen of its contents and the whole weight of these falls against the diaphragm, with the result that its value as a muscle of respiration is greatly impaired, and the patient has to depend almost entirely upon costal movements. Anything, therefore, that can be done to allow of freedom of thoracic movements is clearly of advantage.

These pelvis supports have now been used at St. Peter's Hospital for more than two and a half years, and are found to be very satisfactory. Admittedly, it is necessary to fit them carefully to each case, but there is no more difficulty in this than there is in the correct adjustment of shoulder-rests. They do not inconvenience the operator in any way, either for midline incisions or for operations in the iliac fossæ. The disposal of the patient's arms requires attention, and if they are placed at the sides, it is necessary to put thick pads of wool underneath the elbow-joints. The supports can be fitted to any operation table of the type illustrated.

A CASE OF "EALES'S DISEASE"

(RECURRENT INTRAOCULAR HÆMORRHAGES).

By Allister M. MacGillivray, M.B., Ch.B. St. And., D.O.M.S.,

SURGEON TO THE DUNDEE EYE INSTITUTION.

Eales's disease, which was first described by Henry Eales in the *Birmingham Medical Review* of 1880, is characterised by the occurrence of hæmorrhages into the retina and vitreous in young adults. These hæmorrhages tend to be recurrent, and the disease is specially prone to attack young male adults, although females are by no means exempt. Both eyes are usually involved sooner or later. In the earlier attacks the hæmorrhages may clear up with restoration of good vision, but the tendency is for permanent defects, or complete loss of sight, to supervene after several occurrences, as a result of the development of dense vitreous opacities, cicatricial bands in the retina and vitreous (retinitis proliferans), and detachment of the retina.

The subjects of Eales's disease frequently suffer from periodic attacks of epistaxis and chronic constipation, but the great peculiarity of the condition is that no definite constitutional cause for it has ever been discovered, the heart, the lungs, the blood-vessels, and the kidneys usually being normal. Various suggestions as to the causation have been put forward by different authorities, but as yet none has proved convincing. It has been ascribed to anomalies in the coagulability of the blood, the coagulation time being either raised or lowered; the action of a tuberculous toxin; myocarditis; enterogenous auto-intoxication; disturbances in the functions of the endocrine glands, &c. Syphilis has definitely been eliminated as a causative factor. The treatment is most unsatisfactory. Laxatives, potassium iodide, calcium lactate, injections of horse-blood serum, and many other methods of treatment have been advocated, but in the majority of cases all efforts in attempting to prevent recurrence of the hæmorrhages have proved useless. A few cases, however, have been reported, where for no apparent reason the hæmorrhages have ceased after varying intervals of time, with the restoration of good vision.

The following is a case of Eales's disease in a young male adult, the only abnormality found being a lowering of the coagulation time of the blood.

A man, aged 28, was first seen by me on May 20th, 1924. He complained of a dense cloud over the left eye which came on suddenly the previous morning. Up to that time the eyes and eyesight were perfect, and there was no history of serious eye troubles in any other member of the family. He was not a "bleeder" and, as far as he knew, none of his family was, or had been, bleeders. The vision of the left eye was reduced to perception of light only. On examination the vitreous was found to be filled with blood, obscuring any view of the fundus. The vision of the right eye was 6/6. This eye was normal in every respect, except for 2 dioptres of simple hypermetropia.

He was referred to his own doctor, who reported that there was nothing in his general condition to account for the hæmorrhage. He was then put on a course of potassium iodide. The hæmorrhage began to clear up, and a month later

the fundus was with difficulty seen, but no abnormality observed. Three weeks later another hæmorrhage occurred, again filling the vitreous and obscuring the fundus. His general condition was once more very carefully investigated and again was reported to be normal, there being no evidence of cardiac disease, tuberculosis, or intestinal auto-intoxication. The coagulation time of the blood was tested and proved to be slightly lowered. With a view to preventing any further recurrences, calcium lactate was substituted for potassium iodide.

The hæmorrhage was very slow in clearing up, and it was not until some six months later that a clear view of the fundus could be obtained. During these six months no recurrence of the hæmorrhage had taken place, but he had suffered from several slight attacks of epistaxis. The vision of the eye was 6/60. On examination a narrow sickle-shaped band of white fibrous tissue was seen arising from, and obscuring, the optic disc. This fibrous band extended towards the macular region and projected for some distance into the vitreous. The macula itself was not involved, the band curving below it to end in a fine point some two discs breadth beyond. Several newly formed blood-vessels were to be seen curling irregularly over the white mass and projecting into the vitreous.

A vitreous hæmorrhage usually becomes completely absorbed, but in certain cases, such as in Eales's disease, organisation takes place. This is due to the action of fibroblasts derived from the only mesoblastic tissue in the retina, that forming and surrounding the central retinal blood-vessels. As a result of this organisation, bands of white fibrous tissue develop, along with adventitious blood-vessels derived from the central retinal system, and the condition is known as retinitis proliferans. These bands project into the vitreous from the region of the optic disc and may be attached at their extremities to the retina. By cicatricial contraction, the bands may drag upon the retina, with the result that the retina becomes detached, causing complete loss of sight.

Two months later another relapse occurred. Injections of hæmoplastin were instituted, but relapses recurred every month until December, 1925, when by focal illumination a large blood-stained detachment of the retina could be made out. The right eye remained normal.

The patient was not seen again until Feb. 8th, 1928, when he was examined at his house. He was in a very melancholic condition and had not been outside his own home for nearly two years. Consequently examination was difficult and his statements inaccurate. As far as could be ascertained there had been deterioration of the vision of the right eye for some time past, culminating in an attack of sudden blindness in the beginning of January. It was impossible accurately to judge his visual capacity, but he was able to make his way about the house slowly by himself, though quite unable to do any reading. On examination two broad bands of white fibrous tissue could be seen arising from, and obscuring, the optic disc and projecting into the vitreous. One of these bands extended nasally, the other temporally, each to terminate in a fine point attached to the retina. The macular region was completely obscured by the temporal band. A few newly formed blood-vessels could be seen coursing irregularly over these white masses, also several patches of recent hæmorrhage.

An interesting feature of the case is that in May, 1926, the patient was admitted to hospital for special investigation as regards his nervous system. He was under the care of Dr. W. E. Foggie, to whom I am indebted for the following notes.

He was found to have retention of touch in the right arm, the right side of the trunk, and the right leg, but analgesia and thermo-anæsthesia over the same area. There was some stiffness and weakness of the left leg. With the knowledge of recurrent intraocular hæmorrhages in the left eye the condition was diagnosed as a hæmorrhage into the spinal cord in the lower cervical region—a hæmatomyelia, with probably some pressure on the pyramidal tracts of the left side. The Wassermann was negative. The electrical reactions of the limbs were normal. The other systems were normal. Blood pressure: 140/105. Blood coagulation time: 7·5 seconds—i.e., lower than normal. The patient was very nervous and his general outlook gloomy.

The prognosis is grave, the probability being that a detachment of the retina will eventually take place, as in the left eye, owing to cicatricial contraction of the white fibrous bands.

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MEDICAL SOCIETY OF LONDON.

Advances in the Treatment of Cancer of the Cervix.

A MEETING of this Society was held on March 26th, with Mr. H. W. CARSON, the President, in the chair. Opening a discussion on the treatment of cancer of the cervix, Dr. HERBERT SPENCER spoke of the futility of relying on statistical inquiries based on insufficient data, and appealed to younger gynæcologists to follow up for a period of five or 10 years the first 10 or 20 cases they saw, putting full particulars on record, in order to replace the misleading statistics of to-day. No growth should be accepted as cancerous unless it had been examined microscopically by experts in gynæcological pathology; some of the cases of "cancer" recorded might owe their non-recurrence to their non-malignancy. Advance was still needed in the early recognition of cases. Preventive treatment was difficult, but irritation of lacerated and inflamed tissues was likely to produce cancer, and therefore such sources of irritation must be dealt with. The substitution of total for sub-total hysterectomy had been a great advance, and the latter operation should be abandoned.

Dr. Spencer then reviewed the history of the treatment for cancer from Anglo-Saxon times down to 1828, when James Blundell successfully removed a cancerous uterus for the first time. Despite hopeful researches, such as those of Thies on immunisation by cancer-albumin and cancer-implantation, and of Blair Bell on lead, the treatment of cancer of the cervix at present resolved itself into excision or irradiation. High amputation, preferably with Byrne's electro-cautery, was excellent for early cases, especially in elderly women; it was free from risk and allowed subsequent pregnancy. Simple vaginal hysterectomy could be performed in many ways, but the cautery had advantages in lessening hæmorrhage and the frequency of recurrence. The immediate mortality was very low, and the vaginal operation did not interfere with marital intercourse nor cause scar-hernia. Extended vaginal hysterectomy consisted in more extensive removal of the tissues with the help of paravaginal incisions. Its mortality was higher than the simple operation, but had been reduced to 2·7 per cent. by Pehan. It was important that the peritoneum should be carefully closed, as gauze drains might set up adhesions which later produced obstruction. Like the abdominal operation, extended vaginal hysterectomy interfered with marital intercourse. The chief advantage of abdominal operation lay in the removal of infected glands, though it was possible that extensive removal of glands and cellular tissue had disadvantages other than that of increasing the operation risk. Simple abdominal hysterectomy was useful where there were complications or where weakness or advanced age made extended operation inadvisable. Wertheim's operation allowed wide removal of tissue, but had a high mortality and late sequelæ. The mortality-rate had been lowered by gauze drainage, but this favoured hernia of the scar and intestinal obstruction. In about two-thirds of the patients the glands were not cancerous, their removal increased the danger and could never be really complete, and it appeared that cancerous glands could free themselves from cancer, especially with the aid of irradiation. Combined abdominal and vaginal hysterectomy had some advantage in lessening the exposure of the peritoneum and the danger of infection. Treatment could be eclectic, and no one form was suitable for all cases. The most hopeful method for the future was irradiation.

Treatment with Radium.

Dr. MAX CHEVAL (Brussels) said that he used large quantities of radium emitting rays with a wave

length corresponding to a tension of 2,000,000 volts. Slosse and Reding of Brussels had shown that the blood-sugar curve, after ingestion of dextrose fasting, was quite distinct in the sufferer from malignant disease. Her normal blood-sugar was slightly higher than that of the healthy person, and the maximum after taking dextrose would be between 0·25 and 0·26 per cent. occurring one hour instead of half an hour after ingestion and taking two hours to reach the resting level again. The blood-sugar curve retained this "malignant" character after operative cure, but after cure by irradiation, either by X rays or gamma rays, the curve returned to normal. If irradiation had effected improvement but not cure, the degree of return of the blood-sugar curve towards normal was a measure of the improvement effected, and the curve would betray a recurrence before this could be detected clinically. Similar information was given by the acid base level. The pH increased in malignant cases, and the alkalinity might rise to 7·57 in acute cases. After operative cure it remained high; after cure with radium it returned to normal. Exactly similar results had been obtained for the ionised calcium of the blood.

After outlining earlier methods of radium treatment and his reasons for discarding them, Dr. Cheval described his present method.

The apparatus treats two patients at once, placed in bunks, at right angles to each other, with the radium between them. Four grammes of radium element are placed in the centre of a mass of lead in which canals had been drilled to permit emission of radiations upwards and downwards. The element itself lies in a square box, 4 × 4 cm., made of steel and copper, equivalent to 1 mm. of platinum. The radium is thus spread out on a surface of 16 sq. cm. The localisation of the rays is given by the mass of lead, and the rays which are not to reach the patients must pass at least 8 cm. of lead. Above and below the radium is a canal in the shape of a truncated cone with the small opening near the radium and the large end looking towards the patient. The screenage is 1 mm. platinum, 5 cm. aluminium, and 4·5 cm. wood, and the minimum distance between the radium and the skin is 12 cm. The area of skin irradiated is 12 sq. cm.

The results, said Dr. Cheval, were controlled by accurate iometric measurements by Prof. Picard. To treat a deep-seated abdominal growth six areas were successively irradiated, two on the front, two on the back, and one on each side. The resulting area of evenly radiated tissue was a polyhedron equal to a sphere of 22 cm. diameter. The radiation extended far beyond the affected zone and its lymphatics. The effect on a dry skin was slight dermatitis with brown pigmentation and a few vesicles. Nearly all the hair fell out in three or four weeks, but was restored within six months. On a moist skin the reaction would be more acute, but harmless. There were no subcutaneous reactions. Cartilage and bone offered no obstacle to these rays; the gamma rays went through them without causing necrosis. The general effects were never serious. There was usually slight tiredness and occasionally a little diarrhœa or vesical irritation. The urine had been carefully collected and analysed but showed no abnormality, nor had there been any alteration in the composition of the blood even with irradiations as strong as two and a half curies. Thus, the human organism could stand very large amounts of irradiation, up to 480,000 mg. hours of radium element, corresponding to 900,000 mg. hours of radium bromide.

To test the clinical effects daily biopsies had been performed as long as possible, and Dr. Cheval produced microphotographs showing the invasion of tumours by leucocytes and their absorption. The method had only been in use two years, and therefore cures could not yet be claimed, but statistics showed that at least 30 per cent. of all cases treated by irradiation were cured. The new method should raise that figure considerably, and the treatment deserved to be regarded as something more than a palliative for hopeless cases.

Discussion.

Dr. F. J. McCANN thought that cancer was a general disease with local manifestations. Patients usually had a period of subnormal health before the growth appeared, and the occasional failure of extensive operation even in early cases convinced him that there was something in the patient which determined cure or disappointment. It was well known that unless a patient's health improved, and especially if she did not gain in weight after the operation, the prognosis was poor. The individual type was important; he had never seen a breast cancer cured in a fat woman, but generally expected success with a thin dried-up one.

Dr. MALCOLM DONALDSON said that radium was the only treatment worthy of the name for inoperable cancer; its local effect was acknowledged by everybody. The problem of the deeper tissues and glands was being met by X-rays, intra-abdominal radium, and the application of large quantities of radium outside the body as Dr. Cheval had described. The results of radium in operable cases compared with those of surgery were about equal. The disadvantages of surgery were that it took years to learn the technique, and the mortality, even under the most skilful hands, was considerable—15·8 per cent. according to Victor Bonney's figures. Few cases were really suitable for operation, and many patients were deterred from seeking advice by the fear of it. Radiotherapy had the advantages that the initial mortality was negligible; it was suited to nearly every case of carcinoma of the cervix except those with fistula and moribund patients. The technique could be rapidly acquired by any gynæcologist; the time in bed was reduced and the fear of operation lessened. On the other side, there was as yet no scientific evidence that radium dealt with the glands as efficiently as other methods. At St. Bartholomew's the method was to apply about 22 needles, containing 50 mg. of radium element. The thickness of the walls—5 mm. of platinum—filtered the rays. The needles were kept in place by a gauze pad soaked in flavine, and left for 144 hours. To gain the knowledge requisite for judging which form of treatment gave the best results, it was necessary to concentrate on discovering the effect of the rays on the individual cell. Working with tissue cultures at Cambridge, he had found that more damage was done by small doses over a long period than large doses for a short period. Gamma rays had a selective action on all quickly growing tissues; sections of growths after treatment showed rapid swelling and breaking down of the malignant cells, while normal tissue cells remained intact. He had used an intra-abdominal technique which involved packing the whole pelvis with gauze and leaving the radium in place for about a week; there had been a good deal of reaction in his cases, but all ten patients were now alive after two years. He was giving the method another trial without the packing; a patient who had had 40 mg. of radium element in needles, each one sewn to the peritoneum, experienced little reaction, but the method was still on trial. It was a great mistake to talk about cure, and he based his statistics on length of survival. Of operable cases, he had 16 living and had lost 7, of borderline cases 3 were living and 6 had died, and of inoperable cases 48 were living and 112 had died. He had given up the extraperitoneal operation because it was a blunt dissection and led to discharge; it was a mistake to apply radium to damaged tissues. The combination of the Wertheim operation with radium had not been very successful.

Dr. DOUGLAS WEBSTER regretted that the value of distance radium therapy was insufficiently recognised in this country; it had given good results on the Continent not only in gynæcological cancer, but in gastro-intestinal, mediastinal, and cerebral growths. Post-Wertheim X ray treatment had prevented recurrence after three or four years in 50 per cent. of his cases, and showed a much lower operation mortality-rate. According to Meyer, of Tübingen, the pre-operative use of radium reduced the mortality from abdominal sepsis to less than one-half of what it had been; a considerable number of

inoperable cases had been rendered operable within a few months, and the percentage of recurrences had been much lessened.

Dr. S. FORSDIKE remarked that the application of radium to the vagina and uterus could not affect the glands in the iliac region; possibly external application might overcome this difficulty. The technique was not easy, and radium was much misused. Penetration of lymphatic spaces in the growth during the insertion of needles facilitated metastasis.

Dr. G. E. VILVANDRÉ ascribed the superiority of radium over X rays to the much higher voltage equivalents which it represented. If X ray installations could be constructed to give an output of 2,000,000 volts, they might give results even better than those obtained by Dr. Cheval. He thought that an alleged predisposition to cancer was often due to an undiagnosed tumour and a mild carcinomatosis.

Dr. A. GOODWIN said that in many borderline cases where the growth was irremovable the combined method was the best. When it was impossible to perform Wertheim's operation the glands should be removed and all the vessels ligated; the mortality from this procedure was almost nil. The use of radium after this was better than its use alone. He had known needles to be lost in a patient's body, and an elderly patient had died from radium burns and necrosis leading to rupture of the femoral artery, although the dose had been quite moderate.

Dr. SPENCER and Dr. CHEVAL replied.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF ODONTOLOGY AND ELECTRO-THERAPEUTICS.

A COMBINED meeting of these Sections was held on March 28th under the presidency of Mr. W. RUSHTON (Odontology) to discuss the subject of the

PULPLESS TOOTH.

Mr. FRANK COLEMAN opened the debate from the dental side. He said the pulpless tooth should not be termed a dead tooth, for its periphery—i.e., the cementum — retained some vitality through the periodontal membrane. There was a separate blood-supply and therefore probably also a separate nerve-supply for the pulp of the tooth. When the pulp was anæsthetised by applying a local anæsthetic directly to it, the periphery of the tooth was not rendered anæsthetic, and whereas the pulp could be removed painlessly, the tooth itself could not be extracted without giving pain. On the other hand, by injecting a local anæsthetic around a tooth, painless removal became possible, yet the pulp would retain a measure of sensibility.

The main principles concerned in the treatment of teeth with exposed live pulps or teeth containing dead pulps were: (1) To remove, as far as possible, every trace of pulp tissue. In teeth having live pulps the desensitisation of the pulp must first be assured by means of a local anæsthetic or a caustic. If the latter was used, a few days must be allowed to elapse to bring about complete devitalisation of the tooth pulp. (2) To cleanse the root canal or canals of the tooth and to treat the periapical tissues via these channels. (3) To fill the cavity of the tooth when the periapical tissues had ceased to discharge through the canal of the tooth and had formed a scar at the tooth apex. Most dental surgeons, said Mr. Coleman, recommended the filling of the roots of the tooth as well as the cavity in the crown of the tooth. His own practice was only to fill the cavity in the crown of the tooth—in other words, the pulp-chamber. The periapical tissues could then be further treated if and when necessary, the empty root canal serving as a passive channel down to those tissues. The method by which the implanted portion or root of the tooth was treated before its restoration might have a considerable effect on the after-history. The technique should be carried out under as aseptic conditions as possible. He favoured the use of non-irritating antiseptics in the dry or solid form, such as iodoform, rather than in the liquid state. The tooth cavity should only be filled when the periapical tissues had scarred and so had ceased to discharge; to close the canal or cavity of a tooth before the periapical tissues had ceased to discharge was to court disaster. It had recently been shown that pulpless teeth caused less disturbance to their surroundings when their roots were not filled to their extremities than when they were completely filled. Bulleid regarded the granuloma at the end of the root of a dead tooth as a defensive mechanism, and said that it was more often associated with a partially filled root than with a more completely filled one. The reason why so many untreated dead teeth remained quiescent was that their infected canals lay open to the mouth; hence they could discharge exudative products, which, if pent up, would at some time form an abscess. Mr. Coleman regarded a pulpless tooth as a pathological entity; it should be considered an irritant to the tissues. It was not quite simple to decide whether such a tooth should be extracted. If it was important for mastication, reasonable efforts must be made to preserve it, though in so doing the leading principles of surgery must not be disregarded. Many such teeth eventually caused abscess, and they were invariably somewhat tender on percussion. The abscess might open on to the mucous or cutaneous surface and go on discharging through a sinus. Nature's safety-valve for dead teeth was usually on the gum near the apex of the tooth, or between the tooth and its socket, the discharge in the latter case appearing at the side of the tooth. The least harmful form of untreated dead tooth was probably that with a sinus on the gum or at the side of the tooth and with a pulp chamber open to the mouth; in such case the material formed was probably swallowed and largely destroyed by the intestinal juices. The least harmful form of treated dead tooth was that with a relatively clean root canal. Clinically, these teeth were always a little tender on percussion as compared with normal teeth, also less translucent, often presenting slight gingivitis at the gum margin. The root of a deciduous tooth might be so far absorbed as to render the tooth pulpless, yet it might be retained in this condition for many years without apparent ill-effect, though its retention was to some extent governed by the presence or absence of its successor. In elderly people the tooth pulp might undergo concentric calcification until, finally, the whole pulp chamber and the root canal became filled with a mass of calcified tissue. Even such teeth might not cause ill-effects on their surroundings.

Chronic irritation, such as erosion or attrition, would sometimes lead to a deposition of a protective dentine over the pulp. Some day, perhaps, the dentist would be able to promote and control this process. Mr. Coleman did not feel any leaning towards excising the end of a root involved in periapical destruction. The extent of disease in a root could not be diagnosed, as no line of demarcation was formed between the living and the dead portions of the tooth. It therefore resolved itself into the empirical removal of a certain amount of necrotic root. He regarded as only palliative such processes as the opening and scraping of sinuses connected with dead teeth and the injection of drugs through those sinuses; the cause still remained. Unless a pulpless tooth was completely removed a source of infection was present as great as, if not greater than, the original source of mischief.

Mr. OWEN MORPHY said that probably the pathologist would condemn 95 per cent. of pulpless teeth, but the clinician's verdict would not be so sweeping. He himself inclined to the removal of pulpless teeth, especially when definitely septic, though he realised there were occasions when an attempt to save even a septic tooth should be made—for instance, when the patient was robust and well fortified with natural resistance. The partial denture, especially when made of vulcanite, was a prolific source of oral sepsis,

largely because it did not receive the care needed to make it comparatively innocuous. The pulp of a tooth was infected even when there was but a tiny carious cavity. In preparing cavities, the dentist probably never quite removed the infection by mechanical procedures. There were many patients with many large fillings whose pulps were vital, and in the absence of the dead tooth the pathogenicity of these pulps was ignored. In dealing with an infected tooth, the surgeon was mainly concerned with the organisms in the lumen of the canal and any there might be outside the apex in the periapical space; in the latter position the defensive mechanism of the blood stream was able to act. He was a believer in the value of ionisation for the sterilisation of the parts of the root not accessible to mechanical and chemical measures; the current carried the ion of zinc or iodine through the finest channels at the apex of the tooth. Seldom could a greater current than 2 milliampères be tolerated by the patient, but as the area was so small the concentration was really considerable. By employing the positive pole, Russ had shown that organisms could even be withdrawn from a cavity, quite apart from the lethal action of the ions injected. Weston Price, of America, had clearly shown that it was the tooth which had no defensive granuloma that was the dangerous one, as a granuloma was probably an expression of the patient's resistance. Clyde Davis, in a histological analysis of 100 root-filled teeth, in which the filling stopped short of the apex, found that in all cases where the canals were not infected and caustic drugs had not been used, cementum had grown into the apical foramina and quite occluded them. Where infection had occurred, cementum had grown into the foramina, but the occlusion was not perfect. Instrumentation at the apex should therefore be avoided, so as not to injure the vital cells in the periapical region. Also it seemed advisable to devitalise and remove as little of the pulp as possible. The great difficulty was to prevent reinfection of the scar from the cavity end; in this position Mr. Morphy considered that the solid, non-irritating root-filling was safer than a column of gases. The filling of multiple foramina by artificial means was admittedly impossible. He contended that X rays, by indicating the radiolucent area, gave a line of demarcation for the dentist to take as his guide in doing apicectomy. This operation would fail if the scar was formed in contact with the infected dentine.

Dr. H. M. WORTH said that no intrinsic radiological changes were associated with a dead tooth, but often the appearances in or around it were helpful. Among the certain signs that a tooth was pulpless were the following: the presence of filling material in the root canal or pulp chamber, which material was usually metallic, and showed up well in the skiagram; the presence of osteitis with bone destruction or rarefaction only at the apex of the tooth, with loss of continuity in the lamina dura; the presence of filling involving the pulp chamber; the fact that the pulp chamber and root canals had become completely calcified; the presence of a large cavity extending into the pulp chamber, with no other evidence, warranted the conclusion that the pulp was dead. There were also a number of other indications.

Dr. MURRAY LEVICK spoke of the general raising of the bodily resistance by means of artificial light to the skin. This so stimulated the formation of vitamin D that the patients waged a much more successful combat against their infection. But the case was far otherwise if irradiation were applied to the buccal or other mucous membranes; and certainly the rays should not be applied to the throat. Red and ultra-red rays he had found very efficacious in clearing up infective conditions; they would probably be increasingly used for sepsis in the future. They should not be directed upwards through the palate.

Mr. A. T. PITTS considered that the only place for a pulpless deciduous tooth was the dust-bin; treatment of such he did not regard as legitimate dentistry. It was necessary to differentiate between a tooth devitalised by the dental surgeon and one which was already dead. Treatment should be antiseptic rather than aseptic, asepsis being impossible. The treatment of a pulpless tooth was a dental luxury rather than a dental necessity. Removal of septic teeth was a measure of wisdom. When people had had many teeth filled the question of a mass infection always arose. The treatment of a pulpless tooth should be checked by radiography. Treatment of a pulpless tooth was justifiable if careful selection and patience were exercised.

Dr. MEYRICK JONES reminded the meeting that pathological changes as seen in radiograms were not produced quickly, especially in bone; they were the results of months of morbid change. He did not agree that apical granulations were a sign of immunity. A pulpless tooth, even if it showed no pathological change, might at any time become a secondary focus in a general septic state. If in a young adult a pulpless tooth was left in, there should be a periodical report by the radiologist.

Dr. A. LIVINGSTON did not think it was possible to diagnose the vitality, the pulplessness, or the presence of pulp in a tooth by radiographic means. The contention based on the presence or absence of the lamina dura on the apex of the tooth fell to the ground, for the lamina dura was not continuous. He joined issue with Mr. Coleman in regard to what he said about unfilled canals; he did not regard the method as satisfactory, for in the event of an accident to a tooth so treated, it was unable to resist infection; certainly it could not resist caries. If a tooth was septic, all traces of sepsis must first be removed. Apicectomy was a success, but it must be premised that the case on which it was performed was a chosen one, and that it was carried out with the best technique.

Dr. J. F. BRAILSFORD said that dead organic matter from a dead tooth brought into association with the circulating blood through the dentino-cemental foraminæ was liable, even if sterile when the pulp was extirpated, to be infected by any organism there might be in the blood. It had been shown that, whatever medicament was used in the treatment of infected apices, any dressings left in for 48 hours were infected. Even when great care had been taken, root-filled teeth might be a source of great danger. Weston Price considered that 10 per cent. of the teeth which had septic roots gave no radiographic indication of the fact. He spoke of the various risks of misinterpretation of dental skiagrams, and showed a large number of slides.

Mr. ST. J. STEADMAN, speaking of apicectomy, said his object was not, as Mr. Coleman said, to remove the portion of the root which was dead, but to deal with the last ¼ in., which was the important part. For this operation a large incision was needed, and a flap. He agreed about the importance of carefully choosing the cases for filling. If teeth were chosen for the operation which already had pockets round and the periodontal membrane half-dead, success could not be expected; it was more hopeful in teeth otherwise healthy in the incisor region.

Mr. NORMAN GRELLIER held that a pulpless tooth ought not to be retained; inflammation might exist at the apex of such a tooth without causing symptoms, and it might not be detectable by radiography.

Dr. A. C. JORDAN said he felt considerable sympathy with dental surgeons who tried to save dead teeth. The radiologist should confine his efforts to describing and reporting on what the skiagram showed; he should not attempt to prescribe treatment. He believed attempts to save a pulpless tooth were foredoomed to failure. He hoped dental surgeons would not lose any opportunity coming their way to impress upon patients the importance of a proper dietary.

Dr. G. B. BATTEN agreed that the majority of pulpless teeth, if retained, sooner or later caused trouble, though not all of them. Much depended on the vigour and resistance of the particular person.

The PRESIDENT agreed that it depended very largely on the general health of the individual whether trouble arose from retention of a pulpless tooth.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on March 22nd, with Sir WILLIAM WILLCOX, the President, in the chair.

Dr. GERALD SLOT read a paper on

PAIN IN ITS MEDICO-LEGAL ASPECTS.

He said that pain, like insanity, was very difficult to define. Cicero had regarded it as a disagreeable movement in the body independent of the senses, and Erb's view that every increase of ordinary sensory stimuli was capable of producing pain when it attained a certain intensity had been widely accepted. Dr. Slot then outlined, for the benefit of non-medical members, the anatomy and physiology of the pain mechanism, and referred to the work of Pavlov on conditioned reflexes. From the medico-legal aspect, he continued, pain and the absence of pain were of great importance. It was important to decide whether the pain complained of was real or not, whether it had been caused by the accident, and how great was the extent of incapacity. There was a definite condition of over-reaction to pain—Roussy's "syndrome thalamique"—in which there was intense idiopathic pain with increased peripheral sensitivity. The rules laid down by the law courts seemed to be that if a workman were unfit through existing pain or disease to do the work on which he was engaged, or if he broke down or died in consequence of some event which would not have affected healthy persons, his dependents could claim compensation. Pain which persisted as a result of some condition which might have been cured by more effectual medical skill was regarded as incapacity for which compensation was payable. It was for the employer to establish that the treatment was bad. The same rule seemed to apply to a man who refused an operation for the relief of pain caused by an accident. The onus of proof that pain resulted from an injury was on the claimant, whether the pain was mental or physical. (*Joy* v. *Morton*, 1922). It was not necessary to show that the pain was the natural consequence of the injury or accident so long as the chain of causation was unbroken by any new act. It was in this connexion that medical evidence was of the greatest importance and conflict between medical witnesses most likely to occur. Different conditions associated with pain—e.g., erysipelas, bronchitis from influenza due to debility after the accident (*Thorburn* v. *Bedlington Coal Co.*)—had all been held to constitute good claims for compensation.

Pain Without Obvious Physical Cause.

Since pain might be due to a memory or thought which produced the same effect as an obvious factor, it was very difficult to contest a claim. In *Eaves* v. *Balenclytach Colliery Co.*, 1909, it had been held that incapacity arising from nervous defect or loss of will power produced by an accident did not deprive a workman of his right to compensation. It had been found further that if a man honestly believed that he was incapable of work, as a result of pain or neurasthenia resulting from his accident, he must remain compensated even though evidence could be adduced that employment would facilitate his recovery (*Wall* v. *Steel*, 1915). Brooding over the effects of an accident had been held not to be incapacity within the Act. A very large number of cases of pain in the back had been placed on record.

A strong, active man was riding in a first-class carriage when a slight collision occurred. He was somewhat upset, but was soon able to walk to his business. The next day he felt an acute pain in his back, which ultimately confined him to the house. He was treated and began to improve. The pain was due to a slight rupture of the ligaments in the lumbo-sacral region. Possibly no pain had been noted at the time because there had been no exudation.

As Page had pointed out, it was significant that in hospital tenderness of the back was not a prominent symptom of disease of the spinal cord, whereas in injury and malingering it was often made the outstanding feature of the case. Fear of paralysis might cause an honest exaggeration of the symptoms. In attempting to analyse the pain complained of, the doctor must observe the gait and seize opportunities to stretch the dorsal fascia while the patient was off his guard, as by extending the knees in the sitting position. It was important to know if there had been any constitutional symptoms prior to the accident. Other causes must be considered, such as pre-existing arthritis, spinal curvature, flat-foot, and metatarsalgia.

Collins, Master of the Rolls, had laid down the law in *Lloyd* v. *Sugg* on the matter of the nervous subject. Increased pain, or pain greater than one might reasonably expect, caused by nervous shock, in no way diminished the defendant's liability—e.g., the actual shock and pain resulting from a railway accident might be the same in a nervous, delicate lady as in one of sound health, but the resulting injury would be greater in the former. There was no doubt that the nervous temperament, so increasingly common nowadays, would receive pain impulses in a different manner from the non-nervous type and that the mode of spread would be different also. The medical examiner must realise the fundamental differences in the make-up of human beings. Pain and other disorders, as G. Guinon had stated, arose not so much from the immediate cause as from a state of the nervous system such that the exciting cause was able to provoke in it nervous disorders. Pavlov had separated the psychotic from the hysteric dog on purely physical grounds, and shown that a balance between excitation and inhibition was responsible for some of the responses to external stimuli. Fear, hunger, grief, and pain each played their part in securing a different reflex and altering the stability of the nervous system in experimental animals, in whom there was no question of malingering. Pearce Bailey had well said that the malingerer tended to caricature the disease and the hysteric to copy it. The effects of pain might be far-reaching; the reaction to trigeminal neuralgia might be so intense that suicide resulted. Causalgia was a serious and refractory cause of pain. Referred pain in a finger or toe that had been amputated might be a prominent symptom.

Some Illustrative Cases.

It had been held in *Cooper* v. *The Caledonian Railway*, that a plaintiff who was in a carriage the door of which swung violently back so that he thought there had been a collision, and had suffered alarm, headache, and nervous shock, had a cause of action against the company. Shock necessarily played a part, because it lowered the powers of mental resistance and perhaps increased the ease with which impulses were radiated through the cord.

Practical joking might be a cause of action, as in the case of *Williamson* v. *Downton*, 1897. Defendant told plaintiff that he had been instructed to tell her that her husband had met with a serious accident. The result was a violent shock resulting in pains, headache, vomiting, and many weeks' severe indisposition. It had been held here that though there was no injuria, yet an action had been committed which infringed the legal right to personal safety and had in fact caused physical harm.

In *Steel* v. *Behlan*, 1910, plaintiff, a charwoman, had been wounded by a needle which had become embedded in her hand. An operation for its removal had been followed by a contraction of the deep structures of the palm. Her chief complaint had been pain running up the hand into the left shoulder. Her employers had contended that her condition was due to nervousness in an unreasonable degree and not to any alteration of structure. The judge had been satisfied that she was not malingering, but that her inability to use her hand had induced in her a firm belief that she could not use it owing to the continued presence of the needle. The final judgment had been based on the conclusion that she had been unreasonable in not having exercised or worked her hand in a manner which would have prevented the condition of things which had then existed. Since the award the patient had had an operation for cancer of the breast on the same side as the pain in the arm. This case illustrated three important points: hysterical pain might be present; the patient must conduct her life in such a way as to give her a reasonable chance of improvement; and there might be an organic cause for the pain.

The plaintiff always had the benefit of the doubt, but must show a real desire to return to his employment.

Penal and Criminal Aspects of Pain.

The doctor might be called on to decide whether a prisoner could stand a flogging; any advanced organic disease would be a contra-indication. He might be asked during the punishment if the man's health was likely to suffer from its completion; severe hæmorrhage in the case of a hæmophiliac or signs of physical collapse would be the signal to stop. German jurists had paid much attention to acts performed during acute physical pain. English law recognised that the physical and mental pain of childbirth conduced to a state of mind calling for special treatment if a criminal act were committed. There was such a thing as pain delirium, and certain pains led to a disturbance of consciousness and mentality. Sadists and masochists found their way into the courts from time to time, and must be regarded as insane or as people who should be secluded apart from the general community.

Discussion.

Dr. A. S. WOODWARK said that he had never been able to find a satisfactory answer to the lawyer's question whether pain was or was not present. Any medico-legal statement on pain should be based on three factors: the history should prove clearly that there was pain and that it was due to the accident; the position and distribution of the pain complained of must be consistent with the history; and thirdly, no other cause for the pain must be apparent. Beyond that it was necessary to fall back on the veracity of the witness; if a man said he had a pain nothing could disprove it. Fortunately, it was not for the medical man to give any opinion upon this factor. With our feeble definition of pain and inadequate methods of proving it, all must depend on veracity.

Mr. ZACHARY COPE said that it was impossible to examine a patient properly in the law courts. He could recall many patients who had complained of pain with no apparent cause, but as the weeks and months had gone by some good cause had become apparent. Disease of the cerebrum was one of the commonest causes of pain; mental pain was a very real thing.

Mr. W. G. EARENGEY said that the lawyer's difficulty was not only the veracity of the witness, but also the question of whether a medical man had had sufficient opportunity of studying the case and whether on that account his opinion ought to be accepted. Pain in itself was not ground for compensation; all that a workman was entitled to was compensation for incapacity. In the ordinary common law action for negligence, pain was important because compensation was given in a lump sum and the plaintiff could not sue for an injury appearing later. At one time the law had said that there could be no damages for shock, but later a woman in the street who thought her child had been hurt by a negligently driven vehicle had been allowed damages. Not everybody, however, could recover damages for shock, the reason being that the wrong-doer was only deemed to contemplate the natural consequences of his wrong, and could not be held to believe that everyone in the street was going to suffer shock as the result of his negligence.

BUXTON MEDICAL RESEARCH SOCIETY.

A MEETING of this Society was held in the Devonshire Hospital on March 16th, when Dr. CRIGHTON BRAMWELL gave an address on the

TREATMENT OF AURICULAR FIBRILLATION.

He said that in many cases of circulatory insufficiency, although the heart is known to have been damaged in childhood or early youth as the result of rheumatic infection, and there is a valvular lesion of long standing, the more urgent symptoms which bring the patient to seek medical advice are of comparatively recent origin. The onset of heart failure in such cases is often attributable to an attack of bronchitis or to some special physical effort, and careful inquiry reveals that it coincided with a radical change in the cardiac mechanism—namely, the appearance of auricular fibrillation. In the great majority of cases fibrillation can be recognised without instrumental aid; the persistence of the irregularity when the heart is quickened by exercise or other means is the most reliable guide to its presence. It is in those untreated cases of fibrillation in which the heart-rate is slow that the clinical diagnosis is apt to present difficulty. This combination suggests either a badly damaged myocardium or the presence of some active toxic factor such as dental sepsis. The increased ventricular rate which accompanies fibrillation is by itself sufficient to account for the incidence of heart failure. Many beats are so premature that the ventricles are almost empty at the time of systole; such contractions are unproductive, since little or no blood is expelled from the heart and no pulse-wave reaches the periphery. By suppressing these premature beats the amount of work the heart has to perform is diminished, while the resultant prolongation of diastole improves the coronary circulation, and by allowing sufficient time for the ventricle to fill between the beats tends to abolish the "pulse deficit."

In the treatment of heart failure the first consideration is to curtail the heart's liabilities by reducing metabolism to a minimum. This is achieved by making the patient comfortable, and if necessary giving morphia to abolish restlessness, to relieve dyspnœa, and to ensure sleep. On the credit side of the account the aim should be to increase the cardiac output by slowing the heart with digitalis. In urgent cases massive doses should be given, in accordance with the method suggested by Eggleston, and provided the patient has not previously been taking any drug of the digitalis group, and an interval of six hours is allowed to elapse between successive doses, the method is perfectly safe, being, in the lecturer's opinion, preferable to the use of intravenous strophanthin. When the heart failure is less acute one drachm per diem of the tincture, or the equivalent dose of the infusion or the powdered leaves will meet the case. If toxic symptoms supervene, and this is especially liable to occur when the fibrillation is associated with advanced myocardial disease, the drug should be discontinued for the time being. The most important of such symptoms are nausea, headache, vomiting, oliguria, bigeminal heart action, and certain other less common types of arrhythmia. In this connexion it is important to distinguish the vomiting due to congestion of the gastric mucous membrane from that produced by an overdose of digitalis, and to remember that in febrile patients a heart-rate of 90 or 100 is comparable to one of 60 or 70 in afebrile subjects. Since about 20 minims of the tincture is eliminated from the body in 24 hours, small doses of digitalis may be given over long periods of time without producing cumulative effects. For oral administration strophanthus is less reliable than digitalis on account of the fact that its absorption from the alimentary tract is much more variable, a dose which produces little or no effect in one patient proving toxic for another.

Quinidine differs in its action from digitalis since it actually stops the fibrillation and restores normal rhythm in about 50 per cent. of the cases treated. Unfortunately it is only in a much smaller number that the normal rhythm is maintained, and one of the causes of relapse is the persistence of the toxæmia which originally induced the condition. In a series of temporarily successful cases belonging to the rheumatic group in which Dr. Bramwell had followed up the after-histories, 50 per cent. sooner or later reverted to fibrillation. Similarly when fibrillation is associated with gross myocardial fibrotic changes it is unreasonable to expect the same benefit from quinidine therapy as in those cases where the abnormal rhythm is of recent onset and the myocardium is relatively healthy. On the other hand, in those thyrotoxic cases where fibrillation still persists after the other symptoms have been relieved by a subtotal thyroidectomy, quinidine therapy is seen at its

best. In time the normal rhythm is restored and there is not the same tendency to relapse. It is difficult to assess with certainty the risks of quinidine therapy, for the special catastrophes for which it is blamed—namely, cerebral embolism, and sudden death, resulting from ventricular fibrillation—are liable to occur in any old-standing case of auricular fibrillation even if quinidine has never been used.

EDINBURGH OBSTETRICAL SOCIETY.

Ovulation and the Menstrual Cycle.

A MEETING of this Society was held on March 13th, Dr. HAIG FERGUSON, the President, in the chair. Dr. WILFRED SHAW, after describing the histological changes that occur in the Graafian follicle during the process of ripening, went on to speak of the method used to determine the time relations between ovulation and menstruation. It consisted, he said, in the accurate histological examination of both ovaries of women with normal menstrual cycles. In these cases the dates of the last menstrual period and the day of the cycle when the specimens were obtained were known. It was found that recently ruptured follicles and proliferating corpora lutea could be demonstrated only after the sixteenth day of the cycle—the first day of the menstrual period being taken as the first day of the cycle. Until the thirteenth day of the cycle only retrogressing corpora lutea were found, although in cases corresponding to the post-menstrual phase ripening follicles were also present. The conclusions to be drawn were that ovulation took place between the thirteenth and sixteenth days of the menstrual cycle; that it occurred in healthy women constantly without gross variations in time, and that it occurred rhythmically once a month. Further indirect evidence in support of this view could be obtained by observing the earliest time in the cycle when premenstrual changes appeared in the endometrium, for there was good evidence to show that these premenstrual changes were produced by the corpus luteum. Further ovulation was inhibited by the corpus luteum derived from the follicle which first ruptured, and the rest of the ripening follicles in the ovaries underwent atresia, ultimately giving rise to the interstitial cells. Occasionally—in about 5 per cent. of cases—two follicles ruptured simultaneously, and two corpora lutea were found in the ovaries. If both ova were fertilised binovular twins resulted. Ovulation did not occur before puberty or after the menopause, said Dr. Shaw, for at these times no corpora lutea could be demonstrated in the ovaries. During pregnancy ovulation was inhibited, although ripening of the follicle proceeded normally; again, during lactation there was amenorrhœa because no corpora lutea were produced. If menstruation was regarded as due to the disintegration of a premenstrual endometrium, it could be differentiated from abnormal uterine hæmorrhage, and with this definition it followed that menstruation was invariably preceded by ovulation. Menstruation did not always follow ovulation; examples of this were seen in the case of pregnancy and in the condition described as corpus luteum persistens. Fertilisation probably took place only after the fourteenth day, but coitus might prove fruitful before this time, as spermatozoa might survive in the female generative tract for some time after it. Whether coitus could be fertile after the fourteenth day depended upon the survival-period of the ovum after ovulation, and in human beings there was very little evidence to show what this period was. It seemed, however, that the least fertile part of the cycle was the late premenstrual phase. There was evidence to show that the amenorrhœa met with in advanced stages of diseases such as Graves's disease, diabetes, and dementia præcox was due to an inhibition of ovulation. With large doses of X rays and radium ripening of the follicle was inhibited; with smaller doses ovulation was inhibited.

Reviews and Notices of Books.

Tonic Hardening of the Colon.

By T. STACEY WILSON, M.D., B.Sc., F.R.C.P. London: Humphrey Milford, Oxford University Press. 1927. Pp. 210. 8s. 6d.

IN Dr. Wilson's experience the majority of his out-patient dyspeptic cases showed a condition of the colon characterised by tenderness, hardening, and increase of diameter on palpation. He regards the colon as subject to static and contractile muscular activity; when the former is above normal increased contraction is required to overcome the increased resistance. "This increase in the muscular activity of the colon," to use his own words, "would mean an exaggeration of the various reflex phenomena which result from the normal activity of the digestive organs." The symptoms so produced vary from abdominal pain to mental depression and include many diverse conditions. Treatment consists in lessening the abnormal tonic activity by means of intestinal antiseptics and a non-irritating diet, and in reducing the excitability of the reflex nervous mechanism by antispasmodics, especially hyoscyamus. The general health is attended to, and symptomatic treatment given for such troubles as abdominal pain, physical lassitude, and mental inertia. A non-stimulating diet is used if constipation coexists. The results obtained by Dr. Wilson on these lines have been excellent, with the exception of one case which terminated in suicide; but even in this case the author takes the view that with perseverance the illness would have ended in recovery.

Such is Dr. Wilson's thesis and his exposition is interesting, although he hardly makes it clear to the reader that tonic hardening of the colon is the main cause of the symptoms described. He speaks for instance, in one place (p. 33) of an abnormal excess of the stimulant which gives rise to tonic hardening, and in another (p. 36) of a neurasthenic condition, due to one of the less easily recognised causes of nerve strain, as the starting-point of the hardening. Treatment of the underlying condition would be the natural course if such is the case, and Dr. Wilson's own records support this. Many of his cases showed a neurasthenic tendency, and the obvious improvement may have been due to the general rather than the special treatment. This possibility will occur to the mind when faced with the aphorism (p. 192): "In every case of neurasthenia examine the colon for hardness and tenderness. If present, then colon treatment will, in all probability relieve and possibly cure the patient's symptoms." Undue emphasis seems to be laid on tonic hardening where some more important condition is present which may account for the symptoms. Thus a case is described (p. 101) where symptoms disappeared when the colon was treated, but reappeared soon after, the condition finally proving to be one of duodenal ulcer. The author himself comments that an alimentary X ray at the start would have been wiser.

The mode of causation suggested by Dr. Wilson for the tender hard colon is ingenious and well described. The wall of the colon is subject to two opposing types of muscular activity, the one static, the other contractile. Excess of the static function calls for increased activity of the contractile fibres to overcome the increased resistance. This increase in the muscular activity of the colon would mean an exaggeration of the various reflex phenomena which result from the normal activity of the digestive organs. As regards treatment, intestinal antiseptics and antispasmodics are admittedly of value in such cases, but just as the condition of the colic musculature is only one factor, perhaps a minor one, in the general pathological condition, so it seems likely that the author has not fairly estimated the

value of his skilful management of the cases on general lines.

The book is a thoughtful and stimulating production, it contains a capital table of contents, and the format leaves nothing to be desired.

DICTIONARY OF BACTERIOLOGICAL EQUIVALENTS.

French-English, German-English, Italian-English, Spanish-English. By WILLIAM PARTRIDGE, F.I.C., Joint Public Analyst for the County of Dorset and the Boroughs of Poole and Penzance. London: Baillière, Tindall and Cox. 1927. Pp. 141. 10*s.* 6*d.*

THIS book represents an attempt to supply the deficiencies of the ordinary dictionaries in so far as the laboratory worker is concerned. The conception is a good one and it has been ably executed by the author; the result, however, is not quite so satisfying as might have been expected. This is due to the fact that in wrestling with a foreign tongue it is not the words more particularly concerned with the subject which hold up the English reader; it is those in between which present the real difficulty. It is fairly obvious that a "cellule géante" is a giant cell and a shrewd guess may elicit that "conservant le Gram" indicates that an organism is Gram-positive. "Kohlensäure" presents greater difficulties, but even an ordinary dictionary is able to expose the curious gap in a language that has only one word for carbon and coal. While it must be admitted, from a cursory survey of this work, that it contains many words, the meaning of which is fairly clear without recourse to a special dictionary, none the less it is a scholarly effort and will undoubtedly prove of use to those who have no ready access to special dictionaries of the languages in which they are following up a subject.

TWINS AND ORPHANS.

By ALEX. H. WINGFIELD, B.A.Sc., Ph.D. London and Toronto: J. M. Dent and Sons, Ltd. 1928. Pp. 127. 10*s.* 6*d.*

THIS little monograph, a thesis submitted for the degree of Ph.D., is another attempt of a statistical nature to estimate the relative importance of heredity and environment in their effect on mental as distinct from physical well-being. Can racial differences be eliminated by education? Can any system of education create or even increase intelligence, or does it only provide material on which intelligence may play? To what extent are the wide differences in ability due to inheritance or to opportunity and environment? These and other questions will only receive answers when we are able to determine to what extent intelligence is inherited. The data on which the study is based relate to 102 pairs of twins and a shorter series of 29 orphans reared for varying periods under similar environment. The author finds that there is an increasing degree of resemblance in general intelligence among human beings with increase in the degree of genetic relationship among them; in other words, that general intelligence is an inherited trait. No greater degree of resemblance is found in those traits upon which the school concentrates its training than in general intelligence, which is not directly trained at school. Environment is developmental, therefore, not creative. The basic factor in learning being native intelligence, the problem is then to provide for each child a type of education based not so much, or not at all, upon chronological age, but rather upon what his or her native ability demands, and at the same time to retain the advantages, economic and educational, of group instruction. The method of grouping individuals on the basis of *mental* maturity and submitting each group to different school curricula has already been adopted in certain cities, and it will be interesting when comparative results of the two systems of education become available. While the general strength of the arguments contained in the book must be admitted, it is very doubtful if the author's estimation of the effect of environment from the correlation found by random pairing of orphans under similar (or any) environment is of much value. A short account of the cellular basis of heredity and the effect of environment on the inherited bodily structure, together with a full summary of the previous literature on the subject form the opening chapters of a very readable account of an interesting and important study.

A TREATISE ON TUMOURS.

Third edition. By JAMES EWING, A.M., M.D., Sc.D., Professor of Pathology at Cornell University Medical School, New York City; Pathologist to the Memorial Hospital. London and Philadelphia: W. B. Saunders Company. 1928. Pp. 1127. 63*s.*

Prof. Ewing's book is so generally recognised as the standard work on the subject that it is only necessary to chronicle the publication of this, the third edition, and to indicate how it differs from its predecessors. The chapter on tumours of bones has been entirely rewritten on the basis of information obtained largely from the Codman Registry of Bone Sarcoma, and this difficult subject has been considerably clarified. The classification of mammary cancer has been simplified, and the section on brain tumours has been revised. Throughout the book there are many minor alterations and additions, and there are 60 new illustrations. Although the individuality of the author is apparent on every page, the work as a whole deals so exhaustively with the subject that it will scarcely appeal to the student who requires more condensed and dogmatic teaching. But no one who is interested in tumours from anything but the examination point of view can afford to omit Prof. Ewing's book from his library, and one of its most valuable features is that all the references have been verified.

ORIENTAL HERBALS.

The Divine Origin of the Craft of the Herbalist. By Sir ERNEST WALLIS BUDGE, M.A., Litt.D., F.S.A. London: Society of Herbalists. 1928. P. 96. 5*s.*

EVERYTHING written by Sir Wallis Budge is thoroughly interesting, his knowledge being immense and his skill in imparting it being proportional. During the past 40 years a great deal has been found out about the forms and contents of oriental herbals, and this pamphlet introduces us to the oldest oriental herbals from the point of view of the archæologist. The little book is illustrated appositely by reproductions of excerpts from MSS. or tablets in the possession of the British Museum, where Sir Wallis Budge was at one time keeper of the Egyptian and Assyrian antiquities.

THE MICROSCOPY OF DRINKING WATER.

By G. C. WHIPPLE. Fourth edition revised by G. M. FAIR and M. C. WHIPPLE. London: Chapman and Hall. 1927. With 19 coloured and 7 plain plates, 123 text figures. Pp. 586. 35*s.*

THE late Prof. Whipple published the first edition of this book in 1899, and in successive editions it has been a standard authority ever since on the microscopic life (excluding bacteria) of waters with a sanitary interest. It has stimulated inquiry, and so much fresh material has accumulated in recent years that the present edition has been to a large extent rewritten. Algæ are, of course, the most important topic; mechanically and chemically they can deeply vex the sanitary engineer. Protozoa, rotifers, and polyzoa are also dealt with. Part I. (447 pages) takes up the collection and examination of organisms, their environment, the conditions which determine their prevalence, and how they can be kept in check by copper sulphate and other methods; it contains a great mass of interesting information, largely drawn from the personal experience of the authors. In Part II. the common organisms are

classified and described, and many keys are given to help in identification. It is necessarily only a summary, and does not attempt to get beyond genera; ample references are given to the specialised literature which precise work will often need. The illustrative figures are not as good as they should be nowadays; perhaps it will be possible to prepare a new set for the fresh edition into which so admirable a guide will doubtless pass.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY.—In the issue for January, 1928, R. R. James gives the result of his historical researches on Roger Bacon, without pretending to be an authority on the subject. He gives quotations showing that Bacon understood the magnifying properties of convex lenses and their practical use for old persons and those with weak eyes. It is interesting that he had to rely on the support of the then Pope against the opposition of his Francisian superiors for getting his writings transcribed.—S. Taylor Harris contributes notes on a case of aneurysm of the anterior cerebral artery causing compression of the optic nerves and chiasma, and E. Wolff suggests an anatomical explanation of the comparative frequency with which the sixth cranial nerve is affected in cases of increased intracranial pressure. Under the dura mater it runs almost vertically up the back of the apex of the petrous temporal bone. It is at the sharp upper border, where it bends forwards almost at a right angle, that it is liable to compression when there is increase of intracranial pressure.—Alex. MacRae, of Newcastle-on-Tyne, describes an operation which he has found very successful for ectropion of the upper lid. At least 40 different methods have been devised for the relief of this condition. The one here described is that of Dr. Webster, ophthalmic surgeon to the American College at Beyrout. Its principles are the division of the tarsal plate from the conjunctival surface, as in Burow's operation, and the insertion into the gap of a graft taken from the inner surface of the lip, without sutures. A similar method, but with sutures, has been described by W. O. Maher.[1] —David Hardie, of Aberdeen, records a case of myasthenia gravis in which the only symptoms were double ptosis and (when the eyes were opened) diplopia. The result of a successful Hess operation on one eye was greatly to relieve the patient's depression without revealing a diplopia which would have troubled him had both eyes been operated on.—J. G. F. Heal records a case of serious hæmorrhage from the conjunctiva of an infant, following excessive instillation of nitrate of silver.

In the February issue Dr. Adalbert Fuchs, of Vienna, writes a second paper on pseudo-glaucoma, the first having appeared in the *American Journal of Ophthalmology* in 1924. He gives notes and coloured illustrations of three cases. The first one was a true glaucomatous excavation of the disc coexisting with a congenital pit of a portion of it, the tension being normal. The other two were cases of congenital malformation of the optic disc simulating glaucoma. The three diagnostic points on which he relies to distinguish false from true glaucomatous discs, where only one eye is affected, are: (1) the larger size of the disc, compared to that of the fellow eye, in pseudo-glaucoma; (2) the veiling of the vessels at the foot of the excavation by semi-transparent neuroglia in pseudo-glaucoma; and (3) the aspect of the halo which in pseudo-glaucoma is irregular and often pigmented. The foregoing has reference to chronic glaucoma. He has also something to say of a case simulating acute glaucoma, but really due to angiectasis of the eyeball.—E. E. Henderson and R. R. James give notes of a peculiar case of glaucoma in an eye with a large physiological cup. This was observed to have become pathological 18 months after being passed as normal, while the tension which previously had been normal became raised. A trephining operation failed to stop the symptoms altogether. The second eye was normal.—Dr. C. D. Verryp, of Leiden, and Dr. K. T. A. Halbertsma, of Delft, record two cases of Parinaud's conjunctivitis, a somewhat rare affection. Bacteriological examination failed to show any causative micro-organism, and they consider it very improbable that the tubercle bacillus should be responsible for the disease.—R. C. Davenport, in a paper giving the after-results of cataract extraction, has analysed the Moorfields cases for the seven years, 1919–1925—642 in all. The end-results were: Vision of 6/12 or better, 68·7 per cent.; 6/60 or better, 19·7 per cent.; failures—i.e., less than 6/60, blind eyes and excisions, 11·9 per cent. It is only fair to say that the notable proportion of failures was accounted for in over half the cases by pre-existing lesions. Of the three types of operation now commonly performed—simple extractions, extractions with peripheral iridectomy, and those with complete iridectomy, the first two produced a higher proportion of good and very good results than the third. On the other hand, the surgeons who still practice complete iridectomy can point to a distinctly lower rate of iris prolapse. On the whole, it is noteworthy that Davenport's analysis shows very similar results to that of Devereux Marshall, who did the same work for the years 1889–1893.[2] The chief differences are the introduction of the modern method of peripheral iridectomy and the much greater frequency with which secondary needling operations are now performed than they were in Marshall's time. Then the percentage of cases was only 26·5. Now it is 62·4. We may add that Davenport's figures do not include a number of cases which were operated on by Barraquer's method during the years 1923 and 1924, and which have been separately analysed.[3]

The March number is largely devoted to M. D. Vernon's paper on the recording of ocular movements (see p. 664).—Dr. J. Wood, of Cape Town, reports a rare case of melanosis of the iris and new formation of a hyaline membrane on its surface. The appearances were so ambiguous that it was deemed safer to excise the eye, but no actual proof of malignancy was revealed by microscopical section.—E. Treacher Collins adds some remarks on the case.—The important report of the Council of British Ophthalmologists on Ophthalmia Neonatorum was commented on in our columns last week (p. 612).

[1] Ophthalmoscope, 1914, xii., 206.

Reports and Analytical Records.

CADBURY'S DAIRY MILK CHOCOLATE.

(MANUFACTURED AT THE GARDEN VILLAGE, BOURNVILLE, ENGLAND.)

WHEN analysed the following results were obtained:—

Moisture	1·00 per cent.
Ash	1·68 ,,
Fat	35·30 ,,
Protein, chiefly casein	7·87 ,,
Cane sugar	39·70 ,,
Milk sugar (lactose hydrate)	9·00 ,,
Other cocoa constituents	5·45 ,,

A consideration of these figures supports the conclusion that this milk chocolate contains at least one-quarter of its weight of milk solids, with their full proportion of fat. There is also present about 40 per cent. of cane sugar, together with sufficient cocoa butter and cocoa to constitute the chocolate as prepared. The additional food value secured by the presence of this high proportion of milk solids will be obvious to those interested in dietetic values, while the smoothness and palatability of the product will appeal to the consumer.

[2] Royal London Ophthalmic Hospital Reports, 1897, xiv., 56.
[3] Trans. Ophthal. Soc. United Kingdom, 1923, xliii., 232.

THE LANCET.

LONDON: SATURDAY, MARCH 31, 1928.

THE NAMES OF BACTERIA.

THOSE whose pleasure or duty it is to read bacteriological literature know very well that they who beget it live up to LINNÆUS's motto "Nulla dies sine linea." And they are beginning to appreciate the truth of another saying of his—"Nomina si nescis perit et cognitio rerum." At the moment there is no doubt that bacteriological nomenclature is in a mess which may be more or less intelligible to those who live in the subject and habitually talk in its jargon, but which is certainly a substantial obstacle to anyone coming in from outside to try to find out what bacteriology has to contribute to general biology (or, indeed, any extraneous subject) and to those medical men whose contact with bacteriological diagnosis is fitful and occasional. For practical purposes the difficult question of the broad classification of bacteria into families and orders and tribes can fortunately be neglected; and attention may be concentrated on genera and species. There is general agreement that LINNÆUS's binomial (perhaps with an extension into a trinomial) system has proved very satisfactory in botany and zoology for the past 150 years, and any attempt to systematise the names of bacteria naturally takes that plan as its model. Thus "*Bacillus typhosus*" is really as familiar as "the typhoid bacillus," and where such names are in common use no one has felt any more difficulty in the bilingual terminology than do the botanists to whom "Durmast Oak" and "Quercus sessiliflora" are interchangeable names. But there are many organisms which have been left stranded so to speak—the pneumococcus, the meningococcus, Gaertner's bacillus, Morgan's bacillus, for example, and no one has dared to lay impious hands on Pasteur's "vibrion septique." To the expert there is no difficulty, but the experts perhaps have not realised as soon as they might that there is nothing to tell the common man that the meningococcus is closely allied to the gonococcus, that Gaertner's bacillus and *Bacillus enteritidis* are the same thing, and that he must recognise the bacillus of gas gangrene as *Bacillus enteritidis sporogenes*, Welch's bacillus, *B. aerogenes capsulatus*, *B. welchii* and *B. perfringens* with a parallel variation in the generic names. Small wonder is it that attempts are being made to get some order and tidiness into this arrangement.

The Society of American Bacteriologists has interested itself in bacteriological classification for some time, and under its auspices two important books have appeared—Prof. R. E. BUCHANAN's "General Systematic Bacteriology" (1925), which deals with the history and definition of genera and larger groups, and the second edition of Dr. D. H. BERGEY's "Manual of Determinative Bacteriology" (1925), which is a catalogue after the manner of the "Systema naturæ." In trying to decide which is the "right" name of an organism, these authors have naturally tried to follow the law of priority which has grown up as a corollary to the Linnean system, and is probably about as good a principle to follow as any other. Some principle, of course, there must be; the choice cannot be left to the individual fancy of each author of a systematic list. The application of the law of priority is at least as difficult in the bacteria as it is in other groups; the older descriptions cannot always be identified with a current organism, and what were species when their first name was given have since become genera. But it is by no means impossible to make sound progress along these lines and there are not many very radical changes in Dr. BERGEY's list: *Micrococcus prodigiosus* becomes *Serratia marcescens*, *B. pyocyaneus* is now *Pseudomonas aeruginosa*, but the alterations which are proposed are fewer than might have been expected. They are not popular among bacteriologists any more than LINNÆUS's most necessary work was looked on with favour by great experimental naturalists like RÉAUMUR, who cared nothing for the identity and names of the animals he observed and experimented with. And in the fervour for systematisation and binomialisation some rather absurd things have been done; we hardly suppose that *Flemingillus* and *Robertsonillus* will ever be adopted as generic names for certain anaerobes even at St. Mary's Hospital and the Lister Institute. The transition from the old muddle to the new order is bound to be slow and to some extent painful. We welcome therefore particularly a reasonable half-way house in the form of a classified list of the more important pathogenic bacteria which appears in the current number of the *Bulletin of Hygiene*, and which gives the binomial and English titles by which the various organisms will in future be known in that publication. This should be very helpful and will, we hope, do something to persuade bacteriologists that a definite, consistent, and coherent nomenclature has become a real necessity. Its fabrication requires a good deal of work and, which is admittedly rare among bacteriologists, a scholarly knowledge of the history of their subject. An interest in the matter would be a very proper activity for the staff of the National Collection of Type Cultures. And in the end, no doubt, if we follow LINNÆUS's advice, we shall, like him, be able to kneel down on the ground and thank God for making the world so beautiful.

To some people such a goal seems impossible because bacteria are so obviously variable and mutable. This is a misconception of the position. Species among the higher animals and plants are no less real groups since we learned of evolution and found that any natural species is a mixture which may be dissected genetically into quite separate forms. Bacterial species appear to be just about as valid; they differ only because their exceptional rate of multiplication runs their time-scale together, and in consequence, in days or weeks we can see things happen which in ordinary animals and plants are spread over years and centuries and æons. Allowing for the time factor, bacteria will prove as amenable as mammals to any sincere attempt to classify and name them.

A JURY UPON NEGLIGENCE.

AFTER a hearing which began on March 13th and ended on March 21st, a special jury found for the defendants in an action brought by Mr. HENRY STROUD, of Sydenham, against Messrs. BATES, BATES and WILSON, medical practitioners, of St. Albans. The case deserves particular attention because in its conduct the difficulty experienced by juries, when deciding what constitutes negligence in a medical case, is well illustrated. The case shows, also, the importance to the patient of an X ray examination in many circumstances where a fracture can be diagnosed, and in all circumstances where it is suspected. The defence societies regard the procedure as an essential weapon for the

rebuttal of charges of malpraxis, and this should be remembered by the members of these bodies.

Mr. STROUD claimed damages for alleged unskilful treatment in attendance after a motor-cycle accident. The defendants denied that they were unskilful; they further pleaded that, if there had been a wrong diagnosis from which the plaintiff had suffered injury, it was due to a refusal on his part to submit himself to an X ray examination until three months after the accident. The plaintiff's case was that he had a motor-cycling accident on March 7th, 1926, in which the upper part of his right femur was fractured. He said that, when first examined by Dr. WILSON (a member of the defendant partnership), he was told that his muscles were bruised and his leg tendons strained, and that he was treated up till some time in June for strain and not for a fracture. Twelve weeks after the accident an X ray photograph was taken; it showed a fracture of the femur, a fracture which had not united. As the result of this delay in treatment, said the plaintiff, he would be a helpless cripple for the rest of his life, his only hope of cure being a serious and dangerous operation (by grafting on to the bone), if he were advised to submit to it. The case for the defendants involved a flat contradiction of parts of the plaintiff's story. Dr. WILSON said that, on his initial examination, he found Mr. STROUD had a dislocated collar-bone, but he saw no evidence of any other serious injury; he advised him, however, to go into hospital on the next day for an X ray examination. Mr. STROUD, according to Dr. WILSON, declined to go into a hospital and insisted on being treated at his lodgings. On making a fuller investigation next day Dr. WILSON found the patient complaining of considerable pain in his legs; there was bruising, discoloration, and swelling in the hips and lower part of the back. He found no crepitus, but was suspicious of several fractures in the neighbourhood of the pelvis, spine, sacrum, and femur. According to Dr. WILSON'S evidence in court, he again advised the plaintiff to go into hospital and have an X ray examination, and the plaintiff again emphatically refused. Without such examination there were no definite signs of a fracture; massage was ordered to remove the pain and stiffness in the back and hip, but massage was subsequently discontinued owing to the pain it caused. Ultimately Dr. WILSON reopened the matter of the X ray examination; Mr. STROUD at last consented and the fracture was thereby discovered. The main issue in the case was whether Dr. WILSON had advised an X ray examination from the beginning. Doctors can only advise; they cannot compel; if a patient declines to follow advice, the doctor can do nothing but suggest the next best course. The finding of the jury for the defendant doctors is to be taken as an acceptance of Dr. WILSON'S statement, or at any rate (since the burden of proof lay on the plaintiff) a refusal to accept Mr. STROUD'S version.

The jury was absent for four hours and to its verdict for the defendants added the following singular rider: "We are of opinion that Dr. WILSON should have protected himself by calling in another doctor and repeating in his presence the advice that Mr. STROUD should go to hospital and submit to Rontgen rays." There is no chance of cross-examining a jury, so we can only speculate upon the meaning of this pronouncement. It cannot mean that Dr. WILSON should have called in a second opinion, for the second doctor was to be called in not to advise the plaintiff, but to hear Dr. WILSON repeat his advice—not for Mr. STROUD'S benefit, but for Dr. WILSON'S protection. Did the jury mean that Dr. WILSON, foreseeing litigation and the conflict of evidence, should prudently have equipped himself with corroboration? If so, why call in a second doctor? Why not a justice of the peace or a commissioner for oaths? The prudent practitioner, it seems, will in future diagnose by affidavit and prescribe by statutory declaration. After a week of harassing anxiety Dr. WILSON succeeded in rebutting the allegation of unskilfulness, but the proceedings have done nothing to contradict Lord Justice SCRUTTON'S dictum (mentioned in our columns last week) that a jury is an unsatisfactory tribunal for determining issues of skill or negligence.

TUBERCULOSIS ON TYNESIDE.

THE latest addition to the series of tracts [1] for the times issued by the Newcastle Bureau of Social Research is devoted to the prevalence of tuberculosis in the towns on the Tyne banks. In this densely populated district, where badly built and overcrowded houses stand on ill-drained clay, where sunshine is obscured by smoke, where unemployment is prevalent and poverty rife, the conditions for the spread of tuberculosis are ideal. Between 1920 and 1925 Gateshead and South Shields had a death-rate from this cause unequalled by that of any of the English county boroughs. The town of Jarrow had a record even worse than that of its larger neighbours. Though the average death-rate (per 1000 of the population) for all forms of tuberculosis in England and Wales during this period had fallen to 1·083, the corresponding figure for the Tyneside industrial towns was 1·599. Jarrow had a death-rate from pulmonary tuberculosis more than twice that of the average for the urban districts of England and Wales. Whilst the death-rate in Newcastle has been halved in the last 40 years, that of Jarrow remains what it was a generation ago. These figures are profoundly disquieting. They are of vital concern not only to the citizens of Tyneside, but to the whole country, for the factors that have produced a high incidence in Jarrow are likely to produce a similar result elsewhere. The cause of the high death-rate in the Tyneside towns has been variously attributed to malnutrition, to poverty, to overcrowding, to the nature of the subsoil. Probably all these factors are concerned, but there is no reason to doubt that here, as elsewhere, a vigorous campaign against tuberculosis would have reduced its incidence and mortality. The pamphlet explains how any scheme to combat the disease must have reference to the tuberculous persons as the source of infection and to the conditions which make for tuberculosis. Chief emphasis is laid on the latter. Thus the two most important points for Tyneside to consider at the present time are the segregation of persons suffering from advanced tuberculosis and the vigorous prosecution of schemes for building new and reconditioning old houses. The Tyneside Papers merit the attention of all who are interested in social questions. The present paper is a model of what a pamphlet of this kind should be. The chief facts of the situation are clearly stated and, despite conditions calculated to rouse indignation, the writing is marked by restraint. The suggestions made for reform are practical and supported by experience obtained in other areas. Sixty years have passed since John Ruskin wrote his letters to dwellers by Weare and Tyne, and the Papers recall the advice of the Victorian prophet. The words may be less eloquent, but the message is the same—that without clear thinking there can be no helpful action, and that even political power is of no avail unless it is directed by knowledge. We may trust that now the Tyneside communities know the facts they will be moved to take concerted action.

[1] Tyneside Papers. No. 11: Tuberculosis on Tyneside. Bureau of Social Research, Newcastle-on-Tyne. February, 1928. 2*d*.

Annotations.

"Ne quid nimis."

DAIRY FARMING IN THE NETHERLANDS AND DENMARK.

In view of the agitation which has been going on for the prohibition of the importation of condensed skimmed milk, the recently issued report[1] of the Commission appointed by the Ministry of Health to inquire into the conditions of production of milk in the Netherlands and Denmark will be widely read by all interested in British dairy farming. The members of the Commission were Dr. J. M. Hamill, a medical officer of the Ministry; Mr. T. A. Hole, a milk inspector of the Ministry; and Prof. J. Mackintosh, of Reading University. The report shows that in the principal dairying provinces of the Netherlands, Friesland and Groningen, the farmers' coöperative movement is very highly developed, and controls its own creameries and factories for the condensing and drying of milk. The actual dairy products turned out vary according to which happens to be the most remunerative at any given time. In the southern provinces, in which the large towns are situated, there are still some private firms who buy milk from the farmers and compete with the farmers' coöperative societies, and owing to the demand for milk in the towns, condensing becomes more of a subsidiary seasonal activity for surplus milk.

The Commissioners were impressed with the excellence of the Dutch cowsheds which, unlike those in England, have been especially designed for dairy cattle. The artificial lighting of the sheds, whether by natural gas or electricity, is particularly good, and considerable attention is given to the grooming of the cattle. There is little manipulation of the milk at the farms and the milking equipment is consequently simple. Within a very short time of production the milk is being pasteurised at the creamery, so that cooling by the farmer is unnecessary and no special milk room is required. The cows are out in the fields from May to November and milked outside during those months. The payment received by the farmer is based upon the fat content of the milk and the results of certain tests, and the requirements for good quality milk appear to be more stringently enforced by the coöperative societies than by private firms. In preparing skimmed condensed milk the cream is first separated, sugar is added, and the mixture is pasteurised at about 90° C. The Commission found that every precaution for cleanliness was adopted at the condensing factories visited. The purity of the milk-supply in the Netherlands is controlled by a Royal decree, dated June, 1925, and the country is divided into 20 districts, each provided with its staff of inspectors and an efficient laboratory with a staff of chemists and bacteriologists. A district laboratory may examine as many as from 20,000 to 30,000 samples of milk in the year. The farmers' coöperative societies also have their organisations for securing satisfactory milk, and the Commission were very favourably impressed with the efficiency attained by these coöperative organisations in controlling the purity of the milk and the health of the cows. The conclusion, as regards the Netherlands, arrived at by the Commission is that the differences which exist in the production of milk and its conversion into dairy products, or in the regulations which control it, and the manner in which they are administered in this country and in the Netherlands are not sufficiently marked to warrant any differentiation on grounds of danger to health between dairy produce made in England and similar produce made in the Netherlands, and that our regulations do not place any significant burden upon the English farmer which is not already borne by the farmer in the Netherlands.

In Denmark the Commission found that the coöperative movement deals with about three-quarters of the total milk produced, but that the coöperative creameries are chiefly occupied in making butter and that the skimmed milk is chiefly used for the feeding of pigs. The manufacture of condensed milk is on a much smaller scale and, as a result, the Netherlands export to us nearly four times as much skimmed condensed milk and nearly five times as much sweetened full-cream condensed milk as Denmark. The general arrangements otherwise found in Denmark were similar to those in Holland. The Danish cowsheds were even superior to the Dutch. In both cases the excellence of the buildings is not due to regulations, but apparently to recognition of the needs of the case. As regards Governmental control of the milk-supply, a distinction is made in Denmark between milk which is to be used as milk and milk which is to be manufactured into milk products. The Commission conclude: "Notwithstanding the relative paucity of regulations dealing with milk intended for manufacturing purposes in Denmark, we do not think that the milk delivered at condenseries in Denmark differs in any notable respect from the average milk produced in England." It will be seen, therefore, that this report affords no justification for any interference with the importation of condensed skimmed milk on the grounds of danger to health or production by unfair competition. The lesson to be learnt from the report is rather that the further development of the coöperative movement in this country would lead both to improvement in the quality of the milk and to better financial results for the farmer.

[1] H.M. Stationery Office. 1928. 6*d*.

EARLY DIAGNOSIS AND CARE OF MEASLES.

As one of our regular correspondents in the United States remarks in another column, the care of measles in young children is attracting close attention there. In a paper[1] read last November before the New York Academy of Medicine Dr. P. M. Stimson states that measles may often be predicted with some confidence before the appearance of Koplik's spots. "Following the onset of fever," he says, "a slight puffiness of the lower eyelids may be noticeable, and there may also be found a fairly definite line of congestion across each lower lid, about at the margin of the tarsal cartilage and perhaps a third of the way from the lid margin to the fornix." He adds that "in ten children in whom I have observed what I thought was a typical measles line of this sort in the eye and have prognosticated the disease at this stage, it subsequently became manifest in eight." The so-called measles line must be quite marked to be suggestive; its duration as a line is generally brief, the injection spreading in a day or so to involve the entire peripheral conjunctiva and later the palpebral conjunctiva; whilst it should be noted that children with catarrhal conditions other than measles may show a linear conjunctivitis just inside the blepharal margin of the lower lid. One would like to know, but Dr. Stimson does not state, the number of cases suffering from other catarrhal conditions in which he looked for a linear congestion, and the number of measles cases quoted is small. But if his observations are confirmed the sign may prove of considerable value in early diagnosis of the disease. In considering the other signs, Dr. Stimson sums up the features of the invasion stage as follows. First comes fever, followed 12 hours later by puffiness of the lower eyelid and perhaps the measles line, together with the first evidence of the exanthem on the fauces. Then in another 12 hours comes catarrh, followed in a further 12 hours by Koplik's spots. Finally, when 36 more hours have elapsed, the rash appears. During the whole invasion period there is a certain amount of headache and malaise. Most observers will find it difficult to agree that it is usual for measles to be so precise in the presentation of its invasion symptoms as this suggests. While

[1] Jour. Amer. Med. Assoc., March 3rd.

a rise of temperature is usually the first evidence in the invasion stage, it is common enough for catarrhal symptoms to come on at the same time, and they may precede the rise of temperature. Again, Koplik's spots often appear two and three days before the eruption and, in rare cases, may even be the first sign of the disease. The variation is such as to make it of doubtful advantage to set out the symptoms in chronological order. Though strong suspicion may arise in any given case, no definite diagnosis of measles can be made before the appearance of Koplik's spots, unless the so-called measles line proves pathognomonic. As regards management, Dr. Stimson puts forward a plea for the individual isolation of every individual sufferer from measles. In support of it he says that almost innumerable instances can be quoted of otitis media and broncho-pneumonia spreading in a measles ward or through a family group of measles patients. With the individual isolation of all patients at the Willard Parker Hospital, the incidence of secondary infections is said to have dropped very markedly, and with this drop has come a notable fall in the mortality from the disease. The first step towards individual isolation of the patients at this hospital was taken in 1923 to prevent a repetition of the crowding of 1922, when New York City experienced the heaviest measles year of the twentieth century. In further support of his argument Dr. Stimson says that these secondary infections at times seem almost as contagious as the primary measles. Whilst all will agree with him that individual isolation is the ideal mode of dealing with this, or indeed with any important infectious disease, the measure is costly in application. In London there are at the present moment 1500 or more cases of measles in the M.A.B. hospitals. It is not the general experience, moreover, that the complications of measles tend to be almost as infectious as the disease itself. Under adverse conditions patients with broncho-pneumonia are, of course, very apt to infect others in juxta-position, but this does not happen in wards, where the floor-space per patient is sufficient and where there is adequate ventilation by way of the windows. To a great extent the home conditions control the incidence of broncho-pneumonia in measles, and the worse these conditions are the greater the frequency of that complication.

VENTILATION AND HEALTH.

ATTEMPTS to improve the ventilation of buildings have not always been very happy. A case in point [1] is revealed by an American investigation of sickness (especially respiratory) experienced by school-children during the winter of 1926–27. Two groups were chosen. The first consisted of 1232 children attending three recently built, two-storey, plenum-ventilated schools. In this system of ventilation fresh air, after being warmed, is forced into the room by fans through openings 8 or 10 ft. up the wall, and is then drawn out by exhaust fans from near the floor; the radiators warming the air are under thermostatic control. The second group consisted of 794 school-children attending three naturally ventilated, furnace-heated schools, built not less than 40 years ago, with no other source of air-supply than the furnace-ducts and open windows. They represented the crudest type of construction now to be found in the field of school heating and ventilation. Unfortunately no third group, attending open-air schools, was used; but in New York State such schools could hardly be kept open during the winter months. Careful observations were made of the temperature of the rooms in all the schools throughout the period selected, and the data collected, after every possible allowance had been made for differences in the ages and racial origin of the children, showed that those attending the three modern schools had an average absence due to respiratory affections nearly double that of the children at the three old schools. Cases of respiratory disease noted by the teachers among the children who attended school were found to be twice as numerous in the modern as in the old schools. The conclusion drawn from this careful piece of research, which is to be extended, is that a high air flow produced by plenum fans (particularly when combined with high room temperatures) tends to be associated with an excessive incidence of minor respiratory diseases among school-children. Such a conclusion, if correct, is of real value. In this country also there are many different types of heating and ventilation; can we not borrow an idea from the United States and study their influence upon school-children? Judging from the American investigation, the school and not the home is responsible for some at least of the ills discovered among the children by our school medical service, and there seems to be an opportunity here for collaboration between the Board of Education and the expert investigators of the Medical Research Council.

[1] The School Ventilation Studies of the New York Commission on Ventilation. By T. J. Duffield. American School Board Journal, January, 1928. Effects of Mechanical and Natural Ventilation on the Health of School-children. By T. J. Duffield. Journal of the American Society of Heating and Ventilating Engineers, 1928.

MOVEMENTS OF THE EYE IN READING.

A PRINCIPAL part of the March number of the *British Journal of Ophthalmology* is devoted to two articles by M. D. Vernon, of Cambridge, on the methods of recording ocular movements and on movements of the eyes in reading. It was thought at one time that in reading the eyes move backwards and forwards smoothly and continuously, and that perception of the words took place during the movement. It is now known that the eyes move forwards in a series of jerks, and for the last thirty years various observers have investigated the character of these jerks and fixation pauses. The matter is not unconnected with the question of fatigue, and it is satisfactory for readers of THE LANCET to be told that the lines of print least fatiguing to the eye-muscles are those not more than 8·5 cm. in length. As might be expected, the number of fixation pauses varies very much with the individual, his age and ease of reading. The time occupied by the inter-fixation movements is very short compared with that occupied by the fixation pauses; it is the number and duration of the latter which make the difference between a slow and a fast reader. Very slight movements of the eyes also occur during fixation. The eye is never completely at rest, but fluctuates about a central position, moving through an angle of the order of one minute.

A JOURNALISTIC CENTENARY.

ON Feb. 23rd last the *Boston Medical and Surgical Journal* celebrated its centenary, and died, to rise, like the phœnix, as the first number of the *New England Journal of Medicine*, though it may be noted that on the title-page, against the figure "Number 1" are placed the words "Volume 198." This first (or 101st) issue contains the interesting story of the origin and development of the *Boston Medical and Surgical Journal*, illustrated with portraits of John Collins Warren (1778–1856), the founder, and of John Ware (1795–1864), who a little later joined the enterprise—the two had been associated 16 years previously in the issue of a medical journal which had died. A third portrait shows Dr. G. B. Shattuck, who became the editor in 1881, holding the position until 1912, the longest and most successful administration of the journal. There are also pictures of the front covers of the *New England Journal of Medicine and Surgery*, Vol. I., 1812—this is the short-lived predecessor—and of the *Boston Medical and Surgical Journal*, Vol. I. (February, 1828–February, 1829), with its first page, dated Feb. 19th, 1828; other illustrations show the front page of the same journal, Vol. VIII., No. 1, Wednesday, Feb. 13th, 1833, and the front page of Vol. XXXV.,

No. 16, Wednesday, Nov. 18th, 1846, the various specimens showing the changes in style of page and printing. There is also a cover of the *Medical Intelligencer*, Vol. I., 1823–24, the first weekly medical paper ever printed in America conducted by Dr. Jerome V. C. Smith, and published by John Cotton, of Boston, proving that the claim of THE LANCET to be the first medical paper to be issued weekly can be a matter only of days, one way or the other. An informing paper on medical journalism is supplied by Dr. Morris Fishbein, the editor of the *Journal of the American Medical Association*. He gives, with dates, the titles of many medical periodicals published at the beginning of the nineteenth century, and calls attention to the fact that the *Medical Intelligencer* of Boston, founded by Dr. J. V. C. Smith, appeared in the same year as THE LANCET—namely, 1823—but he does not assign priority to either. It is interesting to note that the influence of British journalism was so strong among medical journals for some years that a vigorous move was made to give American character to American publications. A committee was appointed in 1848, presided over by Oliver Wendell Holmes, who the previous year had been elected professor of anatomy and physiology in the University of Harvard, and this body reported that the definite differences in the American constitution and the definite presence in the New World of diseases different from those of the Old World showed that there was a national field for the American scientist to cultivate. How fruitful a field may be gathered from the fact that 30 years later Holmes himself deplored the multiplicity of medical publications in America and elsewhere, while figures supplied by Dr. Fishbein show that the output must be steadily increasing. We welcome the hundredth birthday of our well-known contemporary, whose editorial chair has been filled always by competent journalists, and in whose columns the contributions of many American doctors of international repute have appeared.

INTRACRANIAL HÆMORRHAGE OF THE NEW-BORN.

THE association of asphyxia neonatorum with intracranial hæmorrhage is so firmly established by experience as to be beyond all question. Arising from this association there was at one time an assumption that the hæmorrhage is caused by the asphyxia—an idea put forward by Little in his original paper, and more dogmatically by subsequent observers. No conclusive evidence, clinical or pathological, has been adduced in support of this causal relationship, and of late years the tendency has been to reverse the sequence, and regard neonatal asphyxia as the result of intracranial hæmorrhage, the cause of both being some form of trauma. In Prof. H. Ehrenfest's valuable monograph (1922) this attitude was adopted, with the reservation that asphyxia acts as a predisposing and contributory factor, because engorged veins are more prone to rupture and extravasate blood. A year or two ago Dr. F. R. Ford,[1] whilst expressing his opinion that clinically there is no reason to suppose that asphyxia is an important ætiological factor, pointed out that the question can never be solved on clinical grounds, because of the impossibility of excluding traumatic lesions. In a further investigation,[2] therefore, he has invoked experimental methods, and has attempted to ascertain whether asphyxia per se may leave permanent cerebral damage. For this purpose a number of kittens were asphyxiated by various methods and to varying degrees. In all those which could be resuscitated recovery was complete, and in none of those which died in asphyxia were any definite cerebral lesions to be found; it appeared that the heart-beat was stopped by anoxæmia before any lesion was produced in the brain. Incidentally it may be noted that a comparison of the effects of coal-gas and of pure carbon monoxide suggested that the cerebral lesions which the former produces are due to some unknown poison, and have no relation to carbon monoxide anoxæmia.

Dr. B. P. Burpee,[3] in a recent review of the ætiology and treatment of natal hæmorrhage, adopts a like attitude toward asphyxia, but gives special consideration to the hæmorrhagic diathesis. He has rarely found that the bleeding and coagulation times are increased, and so regards the tendency to hæmorrhage as no more than a contributory factor. He is, however, convinced that intramuscular injection of whole blood is essential in the management of these cases. Dr. Burpee's account of the treatment which should be instituted brings into prominence the divergence of opinion on this question. Besides injection of blood, he advises immediate lumbar puncture. This may be repeated "every 6, 12, or 24 hours according to the symptoms"; its object is to reduce intracranial pressure, and it is done irrespective of whether the fluid obtained is clear or hæmorrhagic. It may be that in this recommendation Dr. Burpee is influenced by his opinion that intracerebral hæmorrhage is rare—an opinion not universally shared. His conviction that the advantages of lumbar puncture greatly outweight the disadvantages, and that reduction of intracranial pressure is always beneficial, are in striking contrast to the conclusions reached by Prof. C. Grulee [4] who contends that removal of fluid and lowering of intracranial pressure are likely to aggravate a hæmorrhage which has not been completely arrested. It is, of course, difficult to ascertain the exact origin of blood obtained by lumbar puncture in the new-born. It may come from a vein in the canal which has been pricked by the needle.

[1] Medicine, 1926, v., 121.
[2] Bulletin of the Johns Hopkins Hospital, February, 1928.
[3] Boston Med. and Surg. Jour., Feb. 2nd.
[4] Haynes's Clinical Pediatrics, 1926, iii., 2, 7, 241.

THE COMMONWEALTH FUND.

FEW people in this country have heard of Fargo, North Dakota, but it is the principal subject of the ninth annual report of the Commonwealth Fund.[5] Six years ago it was a prosperous small community, with no unusual health deficiencies, which had never become awake to the need and value of systematic public health service. The functions of its health department were divided between a part-time health officer, a sanitary inspector, a State employee in a State laboratory, a school nurse, and a Red Cross nurse. The Commonwealth Fund chose it as the centre for a demonstration of how municipal health affairs should be conducted. This year Fargo will be served by a full-time health officer, a school dentist, six public health nurses, a director of school health education, a part-time school physician, and two clerical workers. The fundamental purpose of the demonstration was to secure a wider acceptance of maternal and child health services as an essential part of a complete public health programme, and a graph shows vividly the improvement in sanitation, control of infectious disease, and maternal and child health during the years of the demonstration. As a result of the final year's work the children in the five white elementary schools attained 100 per cent. correction of dental defects. Stress was laid on building up and preserving the health of the so-called normal child. The experience of the demonstration appears to point strongly to the conclusion that it is possible to set up, in a relatively short time, an attitude on the part of school teachers which gives health a radically different status in the minds of growing children. The children in turn teach their parents. "When," says the report, "children voluntarily troop to the doctor for long-range protection against communicable disease an attitude of far-reaching importance has been fostered." It must be confessed that to British minds this seems dangerously like a sacrifice of the *mens sana* to the *corpus sanum*. Not that the healthy mind is forgotten

[5] Address: One East 57th Street, New York.

by the Commonwealth workers. An institute for child guidance has been opened, with a large staff, five of whom are English students. A mental hygiene programme is to be organised in England, and in preparation for this fellowships and observation trips have been arranged for a number of English visitors. The first group of British graduates has now returned to this country and two more annual groups are at work in America. Children accused of every kind of misconduct and delinquency have been received at the Bureau and a large proportion of them have been successfully treated. The information service on child guidance and mental hygiene has answered hundreds of inquiries from all parts of the world, and has published text-books and pamphlets. Educational and legal research and the child welfare work are being continued, and the granting of scholarships in Austria has been extended to workers in strategic positions throughout the country. It will be admitted by all that the satisfactory methods of one country are not necessarily the best for another, and the wisdom of the Commonwealth directors is shown in the fact that no attempt has been made in Austria to introduce American health methods. It will be interesting to see what emerges from the friendly conflict of Commonwealth ideals with British practice when the campaign over here is in full swing.

SANITATION OF THE DEAD.

FOLLOWING a leading article on the disposal of the dead in THE LANCET of Feb. 11th (p. 297), a number of interesting letters have appeared in our correspondence columns. The problem is one which has always confronted mankind, and it is so closely bound up with religious beliefs and social customs, that it is difficult to approach it with a dispassionate mind. Even in an age of comparative hygienic enlightenment the mere suggestion of any interference between the bereaved relatives and their dead would give pain and offence to many. Nevertheless, the methods of the disposal of the dead as carried out in this country are far from satisfactory. Prolonged contact of the dead with the living is bad from every point of view, and it would be of benefit to everyone if at the earliest possible moment after death the corpse could be removed from the dwelling-house to a mortuary or undertaker's parlour. During the subsequent interval which must necessarily elapse before burial or cremation, decomposition could be prevented by the use of a refrigerating plant, or, as is so common in America, by the practice of embalming. Instead of embalming, it has been suggested that sanitation of the corpse should be carried out by the injection of formalin or some other antiseptic solution into the main vessels, but it is a question whether this would be desirable or even effective. There is very little evidence that in this country disease is ever propagated by the presence of a corpse under ordinary conditions, and it is doubtful if the injection of antiseptic solutions into the great vessels would render a corpse bacteriologically sterile. Such an injection would effectively allay the bogy of premature burial, but this fear can be dealt with by other means. And there is the real danger that embalming or antiseptic injections might interfere with a subsequent examination of the body should this be considered necessary. One of the great objections to cremation is the possibility this procedure affords of the concealment of crime, and for this reason special precautions must be taken before any body can be cremated. It is conceivable that injections might have a similar drawback, and for this reason, if for no other, they would have to be rigidly controlled. Unless and until cremation becomes general, anything which tends to delay the corruption of a corpse and its resolution into its constituent elements is to be deprecated. The rapid removal of the body from the dwelling-house to some recognised place would fulfil all requirements, and if this could be combined with a post-mortem examination by an accredited individual, the fear of premature burial would disappear for ever, the concealment of homicide would become more difficult, and medical science would be advanced.

AGE-DISTRIBUTION OF BLINDNESS.

IN a recent annotation on the Welfare of the Blind (March 10th, p. 507) a statement in the Seventh Report of the Advisory Committee was quoted to the effect that 0·5 per cent. of the present blind population —i.e., 258 out of 46,822—are under five years of age, and this statement was regarded as inconsistent with another statement that 17·4 per cent. of the present blind population became blind within the first year of their life. We understand from Dr. F. N. Kay Menzies, medical officer of health for the County of London, that there is actually nothing inconsistent in these two statements. The 17·4 per cent. covers persons of all ages who were born blind or became blind in the first year of life. Assuming that infantile blindness could be wholly prevented for the next five years, while it is true that there would be no persons included in the 0–5 age group, there would, of course, be large numbers of older blind persons who had in the past become blind between the ages of 0–5. It is probably prior to the Ophthalmia Neonatorum Order of 1910 that about one-third of the blind had become blind during the first year of life. Of the 46,822 existing blind persons, 43,340 are over 21 years of age, so that to-day there are living large numbers of blind persons who probably became blind through ophthalmia. This accounts for the apparently high percentage of 17·4 referred to above. It is interesting to note that when the first census of the blind was made in 1919, 21·4 per cent. were recorded as having become blind during the first year of their life.

IDENTIFICATION OF BABIES IN HOSPITAL.

IN most English maternity hospitals the risk of mixing up babies is slight, but some of the larger institutions in the United States have found it necessary to adopt elaborate systems of identification to prevent a confusion, the legal and psychological results of which may be disastrous. Dr. J. B. de Lee, in the *Journal of the American Medical Association* for Jan. 21st, gave an interesting account of the scheme in use in the Chicago Lying-in-Hospital, where 15 babies are sometimes born within eight hours, and where three named Clark have been born on the same day. No single precaution was found trustworthy. In an avalanche like the above, 69 can be read as 96; J. Jones's plaster can get on J. James's back; wrist tapes can fall off or be illegible; the physician may announce the sex wrong or the nurse may make a clerical error. All these and other accidents have often occurred, and the Chicago system, though it may seem irksome, is, according to Dr. de Lee, infallible. The labour ward has a time-book in which are written the names of the parturient and the father. The assisting nurse sets down the times of rupture and delivery, the sex and weight of the child, obstetric particulars, the names of the physician and "scrubbing" nurse, and the number which is to be attached to the baby's navel and wrist. When the baby is born, the cord is tied with a sterile tape bearing an aluminium tag with a number, which the physician calls aloud. Before the cord is cut, the clean nurse ties a tape bearing the same number round the baby's wrist, also speaking the number aloud, and hands a third tape to a bystander to fasten on the mother's wrist. The bystander repeats the number so that all can hear it, and the timekeeper enters it in the time-book. Any disagreement in the original numbers is thus immediately apparent, and the navel-wrist number is associated with the name in the book. A nurse now fills in a form printed on adhesive plaster and fixes it on the child's back; this form has the names, the sex and date of birth of the baby, and the navel-wrist number. At the same time the

office is notified by telephone of the child's sex, the words "son" or "daughter" being used to avoid phonetic confusion, and the hospital entry number is obtained and entered in the time-book and on the history-sheet. Only after this has been done may the child be removed from the labour ward. The child's footprints are now taken, one copy on the mother's labour record and one on a pink sheet which is given to the mother to keep; this sheet also bears, in addition to the other chief particulars, the ubiquitous navel-wrist number, which further appears on the crib-card when the child is sent to the nursery. The mother generally knows her baby before the cord with the navel tag falls off; if she does not, she still has the wrist number and back plaster to help her. The baby goes home wearing these two documents, which are often kept by the mother as souvenirs, together with the navel tag and pink sheet. In case of doubt, the evidence of these records taken together would be sufficient for any jury. Dr. de Lee anxiously invites criticism, but we do not think many readers will be able to find a loophole in his organisation.

IODINE DEFICIENCY AND GOITRE.

MUCH scientific war has been waged around the problem of endemic goitre, and at least six theories have been put forward to account for its occurrence. Prof. D. W. Carmalt-Jones's paper before the Section of Medicine of the Royal Society of Medicine on Tuesday last was a lucid and convincing account of the work in New Zealand, where, as he said, the first thing that strikes the eye of a stranger in the street is the preponderance of goitres. It has been stated that Maoris do not suffer from the complaint, but although this is true of the coastal Maoris, those who have been driven inland have had in their language a word for goitre as long as tradition goes back. In a recent survey of 300 of them, 18 per cent. were found to have enlarged thyroids. The prevalence amongst Europeans has been noticed since 1888, and 1500 men were refused for the Army out of some 130,000 examined when conscription came in during the war. Whatever the environmental factor may be, it does not act uniformly all over the islands, for the incidence among school-children is 16 per cent. in Auckland and 28 per cent. in Wellington, rising to 56 per cent. around Canterbury. With a selective regional incidence like this research workers had something to go on. Fæcal contamination in the drinking-water was excluded by the fact that Christchurch has quite as good a standard of water-supply as Auckland; radio-activity of the water from artesian wells was put out of court by the fact that the incidence was 60 per cent. in an area where the water runs freely in the open. The incidence was high in places where the water-supply was entirely taken from the roofs, and lowest of all in a limestone district, so the suggestion that salts in the water had some ætiological significance could be disregarded. Diet is strikingly uniform all over the country, said Dr. Carmalt-Jones, and could not be held responsible for a condition with such variations in degree. Geological considerations put forward in Europe could not now hold for New Zealand, but as soon as Hercus examined samples of the soil of the different districts for iodine-content, a striking parallelism between low soil iodine and high goitre-rate was manifest. The preventive treatment, therefore, was to add iodine to the food, and early failures in this direction had been found to be due to overdosage. The amount required was minute, four parts per million being the proportion allowed by the Health Department. The problem of toxic goitre, Dr. Carmalt-Jones pointed out, is much more complicated, and an overdose of iodide in simple goitre may well produce serious toxic symptoms. In the subsequent discussion Dr. Scott Williamson said that the endemic goitre of India is quite certainly not the endemic goitre of New Zealand. McCarrison had found an abundance of iodine in the soil and the vegetable food, and his work was as convincing as that of the New Zealand workers. Dutch investigators have made the interesting observation that those who are susceptible to toxic goitre in Holland are all immigrants, in the third generation, from Switzerland, whose ancestors were liable to simple goitre. Ancestral predisposition possibly plays a part in causing the condition, and, as Dr. Williamson said, there seems little doubt that simple goitre can arise from a number of causes. It may be that there are two quite different types, with different ætiology and different pathology. It is by careful work of the kind done in New Zealand that we shall reach more definite conclusions.

WE report elsewhere in this issue that the Senate of the University of London has appointed a committee to consider the situation arising out of the decision of certain London hospitals not to admit any more women students.

Dr. W. W. Jameson, medical officer of health and school medical officer for Hornsey, has been appointed to the University Chair of Public Health, tenable at the London School of Hygiene and Tropical Medicine. A report of the appointment appears in our news columns (p. 679).

THE death has occurred in Glasgow of Dr. George Stevenson Middleton, consulting physician to the Royal Hospital for Sick Children and the Royal Infirmary. Dr. Middleton, who was 75 years of age, was at one time President of the Association of Physicians of Great Britian and Ireland.

A DESCRIPTIVE account and catalogue of the exhibits in the Home Office Industrial Museum has been issued by H.M. Stationery Office (price 3*s*. 6*d*.). The Museum, which was opened in December last by the King and Queen, has the primary object of informing all who are connected with industry in the latest and best methods of promoting the safety and health of workers; it also affords in a compact and convenient form an object-lesson to medical practitioners and students of the medical side of industrial problems. The Museum has been well visited by many classes of inquirers since it was opened three months ago, and the handbook will serve as a guide to a well-spent visit, while many visitors will find it useful to refresh their memory from it with a view to paying further visits with more instructed minds. The promoters of the Museum intend to keep in touch with the authorities of similar museums abroad, using the interchange of information and ideas to make for progress in industrial hygiene on an international basis.

THE National Association for the Prevention of Tuberculosis has issued a fifth edition of its Handbook of Tuberculosis Schemes for Great Britain and Ireland. This useful compilation is in effect a tuberculosis directory of the various administrative areas in so far as mortality from tuberculosis and provision for its control and treatment are concerned. The information is obtained from trustworthy sources and has been brought carefully up to date. In the present edition data for the Channel Islands are included and the addresses of care committees and of health departments are given. Unfortunately, in many cases there is still no care committee to give an address of. Included in the Handbook are a couple of striking graphs giving the death-rates from tuberculosis in the year 1926 for the various administrative counties, from which the reader can at a glance pick out those in which effort has been apparently less successful. The Handbook will, we may trust, serve a purpose in exciting rivalry between county areas for a good place on these graphs. The price of the handbook is 7*s*. 6*d*. post free from the Association, whose address is for the present, 1, Gordon-square, London, W.C.1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXIX.—THE TREATMENT OF THE SEQUELS OF HEAD INJURY.

IT is not within the scope of this article to treat of all the manifold disorders that may follow injury to the head—conditions as divergent as the rare traumatic diabetes insipidus and the common facial palsy. Attention will therefore be confined to the more common sequels, and to those whose treatment may become a matter of urgency, even at a time remote from the day of injury.

Persistent Cerebral Contusion.

A rational treatment of persistent cerebral contusion can be based only upon a knowledge of its pathology, which we owe largely to Trotter.

Owing to the rigidity of the cranium the volume of the intracranial contents is constant. A limited swelling of the brain can be accommodated at the expense of the cerebro-spinal fluid, but any further increase in size must lead to compression of neighbouring veins and capillaries. A localised cerebral contusion, such as is produced by a blow or a fall upon the head, is characterised by small hæmorrhages and extravasation of blood plasma from damaged vessels. In any other part of the body these products of injury would quickly be removed by way of the blood-vessels and lymphatics. Owing, however, to the unique position of the brain within the rigid skull, the œdema impedes the circulation in its neighbourhood and so prevents its own absorption. Consequently, the contusion may persist unchanged for months or years, giving rise to distressing symptoms of which the most prominent are paroxysmal headaches, often of great severity, attacks of giddiness, and mental disturbances, such as irritability, nervousness, and inability to concentrate. Treatment in such cases is directed to breaking the vicious circle upon which the persistence of the contusion depends and so permitting the absorption of the exudate.

Many cases of persistent cerebral contusion can be prevented if the injury, however slight, is adequately treated in the acute stage.* Treatment of the late cases is based upon the same principles. Rest in bed is the first essential and the patient should be forbidden to get up for any purpose. Sometimes the headaches, which are apt to be most severe in the early morning, can be prevented by the patient's learning to sleep sitting up with his head and shoulders supported upon pillows. Hypertonic saline solution is administered, preferably intravenously, the dose being 70 c.cm. of 15 per cent. sodium chloride solution, slowly injected. Several such injections may be given at intervals of four or five days if necessary. Alternatively, six ounces of a 25 per cent. solution of magnesium sulphate may be administered by the mouth or by the rectum once or twice a day, the patient's intake of fluids being restricted meanwhile; but in our experience the intravenous route is the most effective. The usual analgesic drugs may of course be used in addition, if necessary, for the relief of headache.

Cases of persistent cerebral contusion which fail to respond to treatment with hypertonic solutions require surgical interference. Inasmuch as there are usually no localising signs and the object of operation is to relieve a rise of intracranial pressure rather than to deal directly with a focal lesion, the operation of choice is a right subtemporal decompression. In the event of focal symptoms being present it is wise to do the subtemporal decompression on the affected side. If it is thought advisable to inspect the site of contusion an osteoplastic flap may be combined with the subtemporal decompression.

A new method of treatment for persistent cerebral contusion has recently been introduced by Wilder Penfield.[1] In a case presenting the classic symptoms of persistent cerebral contusion Penfield introduced air into the subarachnoid space in the lumbar region for the purpose of diagnostic radiographic studies. He found to his surprise that within a few days the patient was completely relieved of symptoms, and these did not recur in the ensuing five years. Subsequently he treated six other cases by injecting air in amounts up to 100 c.cm., with remarkable success. The air floats to the uppermost part of the subarachnoid space and can thus be manipulated, by arranging the position of the head, to the region where the headache is most intense. In this region pneumograms have frequently shown subarachnoid or subdural cystic collections. The explanation of the relief of the headaches is not yet clear, but the method appears to open up an important field in the pathology and treatment of post-traumatic headaches. The reader is referred to Penfield's paper for the technique of lumbar insufflation. We would point out that the method is still in its infancy and that it should only be used after most careful consideration and with all the precautions that a major surgical operation demands.

Traumatic Neurasthenia following Head Injuries.

By traumatic neurasthenia we understand a state of anxiety neurosis which occurs in the absence of, or outlasts recovery from, an organic lesion produced by an accident. It is especially prone to follow injuries of the head since the potential seriousness of head injury is well known to the laity. It rarely occurs if the injury be so severe that its disabling effect is undeniable and, as Buzzard says, it hardly ever develops unless the patient is able to fix the responsibility for his accident upon someone else. This statement, however, is liable to misinterpretation unless it is further analysed.

The treatment of traumatic neurasthenia depends entirely upon a sympathetic understanding of its ætiology. In order to make this clear it will be helpful to trace the development of the condition in the imaginary case of a head injury sustained by a workman in the course of his employment.

A labourer while at work is struck on the head by a falling object and sustains a moderately severe concussion from which in other circumstances he would have recovered in a few days. On receiving his injury he is taken to hospital, where he is told by the doctor that he has had a narrow escape from a fractured skull. From his friends, who comment on his ill appearance, he learns that his accident was due to the carelessness of a fellow workman. His employers acknowledge their responsibility to the extent of allowing him half-pay. As a wise precaution against sequelæ he is kept in bed for three weeks and on getting up he naturally feels weak. He now begins to fear that he will not be well enough to return to work for some time. In view of his family responsibilities this excites in him a natural anxiety which intensifies his feelings of weakness. On returning home he feels somewhat better, but owing to lack of exercise he is out of training for heavy manual work. He inquires if his firm can give him a light job and is told that this is impossible and that he must wait till he is quite well before resuming work. This intensifies his anxiety, for he fears that if he returns to work and breaks down he will have sacrificed his half-pay and his earnings will cease. If, on the other hand, he remains at home indefinitely he knows that sooner or later his compensation will come to an end. He has by this time developed a definite anxiety neurosis as a direct result of the situation in which he finds himself. It is unnecessary to trace the familiar story further in detail. Ultimately the man is medically examined on behalf of his employer and usually he is pronounced fit for work, and his compensation is withdrawn. He now embarks on litigation which further harasses him, threatening

* The treatment of head injuries in the acute stage was described in THE LANCET of March 17th and 24th.

[1] Penfield, Wilder: Surgery, Gynecology, and Obstetrics, December, 1927, p. 747; see also THE LANCET, 1927, ii., 1401.

increased expense if it fails and rendering any retreat from his claim morally impossible. Finally his case is decided and, strangely enough to the superficial observer, whether he wins or loses his suit he speedily recovers from his neurosis, thereby confirming the cynic in his opinion that traumatic neurasthenia is merely a mercenary form of malingering. This, however, is an unjustifiable conclusion. The decision of the case cuts the Gordian knot by throwing the patient back upon his own responsibility. He has no longer anything to lose by partial recovery, which therefore ceases to be in itself a source of anxiety to him, and he rapidly recovers completely.

It is evident that traumatic neurasthenia is in its later stages, especially when complicated by litigation, temporarily incurable. It is, however, eminently preventable and, when it first develops, quite amenable to treatment. In dealing with industrial accidents and accidents involving possible claims for compensation every care must be taken, consistent with adequate treatment of organic lesions, to avoid suggesting incapacity to the patient. As soon as he gets up his symptoms must be explained to him and if there is no organic lesion present he must be told that any weakness or giddiness he may feel are the natural results of confinement to bed and will soon pass off. Positive suggestions of speedy recovery must be made. At the earliest possible moment physical exercises should be begun for the double purpose of restoring the patient's capacity for manual labour and inducing a feeling of well-being, one of the most powerful psychological aids to recovery. Lastly, an early attempt should be made to obtain the sympathetic coöperation of the employer or foreman, who can do much to remove the fear of a breakdown following a resumption of work. Many cases of traumatic neurasthenia would never develop if the employer and workman could be made to see that their interests are identical and not, as they are too often from the first assumed to be, mutually antagonistic. Unfortunately, the doctor can do nothing to remove the ultimate source of anxiety, an industrial situation in which "light jobs" are almost unobtainable and the penalties of incapacity so severe.

The problem of dealing with traumatic neurasthenia following head injury is complicated by the fact that persistent cerebral contusion is an organic lesion of the brain produced by trauma, which is usually associated with no abnormal physical signs. Since this condition may cause definite symptoms of anxiety it may easily be diagnosed mistakenly as neurasthenia. It is important, therefore, to exclude persistent cerebral contusion before attributing symptoms following head injury to a neurosis.

As in other states of neurosis, the bromides are of value for the relief of symptoms in traumatic neurasthenia.

Traumatic Epilepsy.

Epileptiform convulsions following head injury may be either generalised or Jacksonian in character. Statistics derived from gunshot wounds of the head during the late war have shown that the proportion of cases developing epilepsy as a sequel is about 5 per cent., a figure which is remarkably constant in all countries. This fact suggests that the fits are not the result solely of the injury, but are probably the outcome of a predisposition to epilepsy, the trauma being only the precipitating cause—a point of importance in relation to treatment. The routine treatment of traumatic epilepsy should be medical, and conducted on the same lines as in the "idiopathic" disease. It is well to begin with potassium or sodium bromide, grs. 10 t.d.s., and to add luminal or luminal sodium, gr. ½ to gr. 1 t.d.s., if the fits are not controlled by bromides.

Operation should be considered in cases which fail to respond to medical treatment after a few months, for if it is to be undertaken it must not be delayed too long. If the presence of a focal lesion is indicated by the history, by radiographic signs, or by the focal character of the fits, exploration may be made at the appropriate site. In some cases benefit has followed excision of, or injection of alcohol into, a localised area of cortex. In view, however, of the probable presence of a constitutional factor in these cases too much must not be expected of such operations.

Subdural Hæmatoma.

There is a curious condition in which blood accumulates beneath or within the dura and only gives rise to symptoms weeks or even months after the initial injury. The blood is for the most part in form of clot and is enveloped in a distinct membrane. It forms a solid mass on the convexity of one or both hemispheres. The condition is frequently mistaken for intracranial tumour, for the initial injury may have been slight and the symptoms are those of slowly increasing intracranial pressure, including papill-œdema, with slight and variable focal signs. The clot should be removed by operation, and particular care must be taken to leave the field of operation dry, for post-operative hæmatoma is very liable to occur. The condition is so frequently bilateral that when once hæmatoma is disclosed over one cerebral hemisphere an exploratory puncture should be made on the other side and at the same operation for, as Trotter has shown, there is danger in delay.

Cystic collections of blood and cerebro-spinal fluid occasionally form beneath the dura as a result of injury and give rise to symptoms like those of subdural hæmatoma. They are treated in the same way.

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INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 17TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 359 (last week 347); scarlet fever, 1607; diphtheria, 1205; enteric fever, 33; pneumonia, 1590; puerperal fever, 42; puerperal pyrexia, 115; cerebro-spinal fever, 11; acute poliomyelitis, 10; encephalitis lethargica, 22; dysentery, 9; ophthalmia neonatorum, 117. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 20 counties:—London, 10 (Paddington 2, Wandsworth 8); Berks, 1; Derby, 15; Durham, 61; Lancaster, 21; Leicester, 1; Lincoln, Parts of Lindsey, 9; Middlesex, 11 (all except 1 from Heston and Isleworth); Norfolk, 1; Northumberland, 18; Nottingham, 18; Somerset, 2 (Bridgwater, Taunton); Stafford, 21; Suffolk West, 1; Warwick, 16; Yorks, North Riding, 4; West Riding, 90; Brecknock, 5; Glamorgan, 28; Monmouth, 26.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on March 20th-21st was as follows:—Small-pox, 8 (one of them being under observation); scarlet fever, 1596; diphtheria, 2508; enteric fever, 32; measles, 1523; whooping-cough, 143; puerperal fever, 10 (plus 7 babies); encephalitis lethargica, 70; "other diseases," 37. At St. Margaret's Hospital there were 13 cases of marasmus and 14 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 172 (97) from measles, 9 (2) from scarlet fever, 43 (11) from whooping-cough, 43 (9) from diphtheria, 54 (11) from diarrhœa and enteritis under two years, and 100 (15) from influenza. The figures in parentheses are those for London itself. The death from enteric fever outside London was reported from Birmingham. Of the 75 fatal cases of measles outside London, 13 were reported from Sheffield, 11 from Tottenham, 7 from Plymouth, 6 each from Bristol and Worcester, 5 from Manchester; while the figure in Glasgow for the same week was 14 (Dublin not reported). The number of stillbirths registered during the week was 301 in the great towns, including 61 in London.

Special Articles.

IMMUNITY AND VITAMIN DEFICIENCY.

A REVIEW OF THE EVIDENCE.

THE idea that the immunity of the body is lowered by dietary deficiency is a very attractive one, and it is remarkable how little experimental evidence there is in support of it. In a paper read before the British Association at Leeds last year and published in our columns, W. Cramer [1] drew attention to the relation of national health to milk production and milk fat consumption. He referred to the best-known example of infection related to dietary deficiency, which is familiar to every dietetic worker who has dealt with rats—i.e., the occurrence of an acute or chronic lung disease in rats, which is associated with a deficiency of the antixerophthalmic vitamin, vitamin A. Lack of this vitamin seems to lead to a breakdown of the mucous membrane, by which, according to S. B. Wolbach and P. R. Howe,[2] a stratified keratinising epithelium is substituted for the normal one. The epithelium may then become infected at many points in both old and young rats. I. G. Macy and co-workers[3] noted otitis media, mastoid disease, and sublingual abscesses, besides the usual lung disease, and H. C. Sherman and F. L. McLeod [4] were extremely struck with the liability to broncho-pneumonia, induced in rats by a deficiency of vitamin A; they argued from the rat to the human being.

Effects of Dietetic Deficiency in Human Infants.

It remained for C. E. Bloch,[5] of Copenhagen, to trace the same condition in human infants. In his studies on children suffering from xerophthalmia, as a result of a diet deficient in vitamin A, he noted the liability of such children to catarrhal infections of the mucous membranes, particularly of the respiratory organs, and to infections of the urinary tract, with *Bacillus coli*. So serious were these infections that the child died if the diet were not changed. Olaf Blegvad [6] gives a set of these cases, in which, out of 60 fatal ones, where the cause of death was known, 46 were due to broncho-pneumonia. The dietary conditions studied in Denmark were, of course, extreme. It is hard to believe that broncho-pneumonia of infants can ordinarily be associated with a lack of vitamin A, but a mild degree of insufficiency might exist and manifest itself in no other way than by a lowering of immunity.

The Antirachitic Vitamin.

When we turn to the antirachitic vitamin we are on less sure ground. The Report to the Medical Research Council on Rickets in Vienna [7] (1923) records that respiratory infections, otorrhœa, and furunculosis were less common in a group of children receiving energetic antirachitic treatment than in a comparable group which were not receiving it, but the antirachitic treatment consisted chiefly in the administration of cod-liver oil, which is rich in vitamin A as well as in vitamin D, so that it is not possible to say which vitamin was responsible for the improved condition. W. Eichholz and H. Kreitmair [8] have lately investigated the effect of diets, rich and poor in vitamin D (irradiated ergosterol), on adult rats and mice. In a series of rats a spontaneous epidemic of paratyphoid occurred among the animals without vitamin D, while those receiving it were spared, but it was never found possible to repeat this observation. It was found that mortality from inoculation with a virulent strain of pneumococcus was decreased by administration of vitamin D and still further decreased when vitamin B, in yeast, was added as well. It is suggested that even among adult human beings vitamin D may have a beneficial effect in raising resistance in the winter when sunshine is scanty. The effect of vitamin D upon immunity is not regarded as a specific one, but one which is common to any form of dietary deficiency.

Inconclusive Experiments.

Every bit of human experience in the matter goes to show that lack of vitamin D facilitates the development of tuberculosis and that administration of vitamin D, as cod-liver oil, or provision for the body, of the opportunity to form vitamin D itself, by exposure to ultra-violet light from the sun or an artificial source cures it after it has developed. There is, however, remarkably little experimental confirmation of this. A leading article in the *Journal of the American Medical Association* (Feb. 4th, 1928) quotes investigations by Agnes H. Grant and co-workers,[9] who have induced tuberculosis in the otherwise very resistant albino rat by feeding it on a rachitic diet. They do not appear to have been troubled by inconsistency in their results, but S. S. Zilva and H. Schütze,[10] who carried out experiments of a similar type, found it very difficult to arrive at any clear-cut conclusion. In their summary they state that they found some evidence for saying that "a large excess of fat-soluble vitamins in the diet, as supplied by cod-liver oil, inhibits the formation in rats of these tuberculous tumours, but such evidence was by no means conclusive." They also found that the inclusion of large amounts of cod-liver oil in the diets of rats, or ultra-violet irradiation of the rats, produced a slight, but constant, leucocytosis. S. S. Zilva [11] had also previously investigated the influence of deficient nutrition, on the production of agglutinins, complement, and amboceptor. He used rats and guinea-pigs and studied deficiencies of the elements, Ca, Fe, K, Cl, P, and Na, of certain amino-acids, and of the antiscorbutic, antineuritic, and fat-soluble vitamins; restriction of total calories was also studied. It was found that a deficiency of phosphorus was the only one which had any effect in lowering the titre of agglutinins and amboceptor. Experiment has not, therefore, been able so far to throw much light on the problem, and we must be chiefly guided by empirical knowledge.

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PUBLIC HEALTH OF SOUTH AFRICA.

THE annual report of the Department of Public Health of the Union of South Africa for the year ended June 30th, 1927,[1] bears close resemblance to its predecessors. Nothing remarkably new is found in its pages, but it is a faithful record of the activities of a rather small Government department, which, even if striking progress is absent, manifest steady improvement in many respects. The work of the department was again severely handicapped by the apparent unwillingness of the legislative assembly to put the Medical, Dental, and Pharmacy Bill on the statute book. This is a long overdue measure, and the same holds true in the case of the Food, Drugs, and Disinfectants Bill. The department also deplores its lack of power to deal with matters like general hospitals, district nursing, school medical inspection and cognate affairs. This is due to the Provincial Administrations having kept the control of these and many other matters too long in their own hands. Attention is drawn to the facilities which the Union Government offers to owners of sick cows, in contrast to the enormous difficulties surrounding the provision of medical aid for those living in remote localities. This does not refer to paupers, for whom the services of

[1] Pretoria: Government Printing and Stationery Office. Pp. 70. 2s. 6d.

district surgeons are available, but to the ordinary class of farmer. The cautious and gradual building up of a State-aided medical service, to be both preventive and curative, is suggested as a hopeful line of advance. The report makes good use of its opportunity to contradict the statements which have appeared in certain newspapers, that the whole population is a C 3 one. The European birth-rate reached 26·5, the European death-rate was as low as 10·15, the infantile mortality-rate was at 64·8; those are reassuring figures, and they show a steady improvement every year. The need for more knowledge of elementary health matters throughout the population is, however, still making itself felt. The department, it will be seen, keeps in touch with international health matters and epidemic intelligence through the channels nowadays available, and has its own intelligence system for inland use. But as regards local authorities, only nine of these have whole-time medical officers of health, and this seems to be worth attention.

The activities of the department include the usual inspections, and the publication and distribution of pamphlets on various health subjects. In future, conforming to the spirit of the time, more use will be made of the public press for such purposes. The sanitation and the water-supplies require a good deal of watching. The port health services have worked satisfactorily. Pending the necessary legislation little can be done to safeguard the public against adulteration of foodstuffs. The department controls the one and only tuberculosis sanatorium, another large hospital for venereal and infectious diseases, and not less than six leper institutions. The notifications of infectious diseases are admittedly too low, as many cases, especially among natives, are never seen by a medical man. It is specially mentioned that the very low figures for *ankylostomiasis* are explained by the dryness of most parts of the country. *Bilharziasis*, however, is rapidly spreading, and a reliable drug, which can be taken by mouth, is very urgently needed. The large outbreak of *dengue* on the Natal coast is apparently not expected to recur. There still is too large a prevalence of *enteric fever* in many centres. The position as regards *leprosy* is gradually improving, although the Government did not see fit to find funds for allowing proper research to be undertaken. That the Union of South Africa is now in the van of progress regarding leprosy is being universally recognised. *Malaria* is of importance for certain definite and generally sparsely populated areas only. A mosquito survey is being undertaken. *Plague* remains a source of danger. The total number of human deaths was only 56, but rodents are increasing in number in areas where they were scarce before, and plague infection of rodents is present over enormous areas. Much efficient work is being done on the eradication of rodents by means of gassing, poisoning, and burning. Urban and rural local authorities have been urged to enforce the rat-proofing regulations; appreciable progress has been made in this respect and the rat in many centres has been "built-out." Research work on *senecio disease* has found a way to prevent this insidious affection, which is conveyed by bread. The promptness with which a threatening outbreak of *small-pox* among the Asiatic and native population of Durban was stamped out by the department shows what can be achieved by a well-advised public health authority which has material, men, and knowledge at its disposal. The Government, however, still refuses to enforce the vaccination provisions of its own Public Health Act; it has stopped prosecutions of objectors, and as a result of this there is a rapid accumulation of unvaccinated persons. About *tuberculosis* no reliable figures can be given, but the need for investigation has been felt and a comprehensive scheme has been started. The position as regards *typhus fever* and *venereal diseases* is not clear. The department has also interested itself in the matter of house-building and public loans for that purpose.

Among other matters we have notes on the child welfare movement, which, under the patronage of Her Royal Highness Princess Alice, held a first congress, and both local authorities and the public show an increasing interest in such matters. There are special courses for a mothercraft certificate, and also for nursery nurses. For the importation and sale of opium and similar drugs Government regulations exist which were duly enforced, giving rise to a large number of prosecutions. Nearly 16,000 lb. of dagga were exported to London. The section on slaughtering and meat inspection shows the prevalence of measly meat and the difficulties arising therefrom which are as yet unsolved. The Union now possesses two Universities which provide a complete medical training; the number of medical students appears to be excessive. The report publishes a summary of the findings of a hospital survey committee, which are too elaborate for this brief abstract; reforms appear to be quite urgent, but no further move has been made. The report concludes with some remarks on hotels, public mortuaries, safety measures in mines, and prevention of seaside bathing accidents. Attention must finally be drawn to the beautiful coloured map showing the distribution of predominant veldt rodents and plague.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Mayor Thompson Rebuked.

THE whole public health world was indignant when the Mayor of Chicago dismissed from office the city health commissioner, Dr. Herman N. Bundesen, whose public health services are so well recognised that he was elected President of the American Public Health Association at its last annual convention. In place of Dr. Bundesen Mayor Thompson has appointed his personal physician, a man whose experience in public health work has not been tried out. Some of the most competent men in the health department have felt obliged to resign. Public health work in America has long been held back by the pernicious influence of politics. It has seemed lately that politicians were disposed to recognise the importance of tenure in office of civil servants. The action of Mayor Thompson has been a rude shock to rising hopes. A firmly worded editorial of protest has appeared in the *American Journal of Public Health* and an even more emphatic statement of protest has been issued by a group which is thoroughly representative of American sanitarians. "The action of the Mayor of Chicago," they say, "strikes a blow at the most fundamental principles of good government. It should meet with prompt and vigorous rebuke from all people of Chicago who care for the reputation of their city, and it should stimulate citizens everywhere to see that city charters are amended so as to make such interference with good health administration impossible in their own communities." The statement is signed by the following amongst others: the Professors of Public Health in the Universities of Johns Hopkins, Columbia, and Yale; the Presidents of Cornell and Leland Stanford Universities; and the Directors of the Schools of Public Health at Pennsylvania and Johns Hopkins Universities.

Reducing Mortality from Measles.

It is now just two years since the city of Syracuse, whose health department is coöperating with one of the health demonstrations of the Milbank Foundation, began its systematic attempt to meet the attack of the measles epidemic then due. They based their campaign on a recommendation first made by the late Dr. John Brownlee and subsequently reinforced by Dr. E. S. Godfrey [1] in this country. This plan is to concentrate the defence forces upon patients under three years of age, since at least 70 per cent. of deaths occur in this age-group. In order that early diagnosis which is so essential to successful treatment should be secured a publicity campaign was begun in good

[1] American Journal of Public Health, June, 1926.

time. The expected epidemic arrived, and the story of how it was met is well told by Drs. Ruhland and Silverman.[2] Ninety per cent. of the cases were diagnosed before the fifth day. This is a remarkable achievement. To it and to the use of convalescent serum must be attributed the drop in fatality for all cases under three years to 1·6 as compared with 5·1 in the previous (1923–24) epidemic. The fatality for the city as a whole is shown to be 43 per cent. below the normal fatality for American cities of its size. Dr. Stimson, of New York, has now drawn attention to an early eye sign—the appearance of a line of redness in the conjunctiva of the lower lid about one-third of the way from the lid margin to the fornix. This sign is found usually very soon after the onset of fever and is a valuable aid in early diagnosis. Dr. Stimson pleads also for early segregation, since he holds that mortality is due chiefly to secondary infections. It seems probable that earlier diagnosis secured by popular health education and suitable administrative measures may halve the present mortality. The closing of schools is from this point of view a hindrance rather than a help. Neither the schools nor the infant welfare centres were closed during the Syracuse epidemic of 1926–27.

Correspondence.

"Audi alteram partem."

SOME OBSERVATIONS ON ASTHMA.

To the Editor of THE LANCET.

SIR,—In view of the interest which is at present being taken in asthma, I feel that a few observations on this distressing complaint will not be out of place. In using the term "asthma" I refer to bronchospasm and not to the other manifestations of this condition. Until recently asthma was generally considered to be a form of bronchitis, produced mainly by exposure, to be treated by expectorants and confinement to bed on a milk diet. The prespastic stage was not recognised.

Asthma, however, never occurs in a patient in whom certain recognisable conditions have not previously taken place. In the child the previous history is usually that of frequent attacks of bronchitis and sometimes of one of the fevers. The child is said to take cold easily, often has a running nose and, possibly, some eczematous patches. In older patients the first attack is very often subsequent to, and merging from, an attack of influenza. Urticaria and eczema are frequent prespastic features, the latter often to be found in the region of the sternum. None of these conditions is constant, but it is rare not to elicit one or more from the history.

The most constant feature that I find in asthma is constipation. This is a condition that at all costs must be corrected. Many years ago Dr. James Adam of Glasgow showed that asthma results from two causes: a toxæmia and a lesion in the respiratory tract. I have been treating patients along these lines for the last ten years with satisfactory results; with increasing experience one finds it possible to discover the origin of the toxæmia without undue delay, although much care and time is usually necessary. For the nasal factor the help of a skilled rhinologist may be required. At the same time wholesale nasal surgery is to be deprecated. It is common to find asthma patients who have had antrum operations, but whose asthma remains unchanged. Frequently in such cases attention to ethmoid infection clears up both the bronchospasm and the antral discharge. Antral infection commences usually in an unhealthy ethmoidal region and treatment of the one without the other will accomplish little towards the relief of the asthma. The object of the rhinologist should be to remove any pathological condition in the nose and all accessory sinuses with the minimum of destruction. Much can be achieved by antiseptic dressings, as suggested by Dr. J. I. Dowling, of Albany, N.Y., but thorough knowledge of the technique is necessary. For the remainder, careful search must be made for any septic focus that may be present, such as apical abscess, gall-bladder infection, or chronic appendicitis, and appropriate steps taken to correct any such condition that may be found.

To ascertain the immediate cause in the production of bronchospasm and remove it is not enough. To discover that a patient gets asthma when he sleeps on a feather pillow, or is exposed to a dust-laden atmosphere is creditable, but to advise him that his only hope is to avoid these things is simply running away from his enemy. I have had many patients who have been advised that to obtain relief they would have to leave this part of the country and live in the south. Such advice is admission of failure of treatment, besides being impossible to a man whose business or professional ties are in the immediate neighbourhood. By attention to diet, bodily hygiene, adequate exercise when advisable; to proper bowel, skin, and kidney elimination, together with consideration of the points I have mentioned above, one is enabled to treat asthma with confidence. For patients with intestinal toxæmia, who cannot tolerate plain paraffin, the addition of kaolin is beneficial.

The greatest difficulty is to secure adequate cooperation between doctor and parents or patient. It is particularly hard to get a mother to realise that outdoor exercise is really necessary to her ailing child. She wants to keep the youngster wrapped up by the fire if the weather is cold, while the doctor should want him to discard his cotton-wool and chase his "Fairy" cycle up and down the pavement for an hour or so a day. Patients, when they have been free of asthma for some months, are apt to conclude that they are already cured. No greater mistake could be made, for if they are allowed to drift back into the original pathological conditions their asthma will return. It is desirable to keep them under observation at regular intervals, which as time goes on can become less frequent.

I am, Sir, yours faithfully,

Newcastle-on-Tyne, March 26th. F. HARRINGTON.

[2] Ibid., February, 1928.

THE ASTHMA RESEARCH COUNCIL.

To the Editor of THE LANCET.

SIR,—Allow me to endorse the letter of Dr. Millais Culpin published in your issue of March 24th, and to refer your readers to the correspondence on Psychogenic Asthma that appeared in THE LANCET about nine months ago, especially to my own letter,[1] in which I pointed out that such cases are but specific cases of the "conditioned reflex."

I am, Sir, yours faithfully,

Shortlands, Kent, March 26th. A. WOHLGEMUTH.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Culpin's letter, may I be allowed to point out that the Medical Advisory Committee to the Asthma Research Council realises fully the great importance of the psychological element in asthma, and for that reason Dr. R. D. Gillespie, physician for psychological medicine at Guy's Hospital, has already joined the committee.

I am, Sir, yours faithfully,

T. T. JEANS,
Hon. Secretary, Medical Advisory Committee.

Hove, March 26th, 1928.

*** We are asked to state that correspondence for the Asthma Research Council should be addressed to the Hon. Secretary of the Council, c/o The London Clinic, Ranelagh-road, London, S.W.1. Letters marked "Medical Advisory Committee" on the top left-hand corner of the envelope will be forwarded to Surg. Rear-Admiral Jeans.

[1] THE LANCET, 1927, ii., 88.

TOXIC SYMPTOMS FROM PLASMOCHIN.

To the Editor of THE LANCET.

SIR,—I have been using plasmochin in the treatment of malaria for over a year with very satisfactory results. It may be of interest therefore to record that within the last week I have had four cases showing very definite toxic symptoms. All four were British, two were cases of subtertian malaria, and two were clinically malaria, no parasites having been found in the blood. In no case did the amount of plasmochin given exceed 0·06 g. in 24 hours, and in no case was the drug given for more than five consecutive days. The symptoms were cyanosis, very marked in two cases, and abdominal pain severe enough in two cases to prevent the patient sleeping during the entire night. These two patients were very much upset and complained bitterly that they felt that they had been poisoned. The supply from which the plasmochin employed was taken was part of a new consignment which had been in the country for less than six weeks.

I am, Sir, yours faithfully,

Khartoum, March 2nd, 1928. H. C. SQUIRES, M.D.

MEDICAL DIATHERMY IN MIDDLE-EAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—I read with great interest the article on this subject by Dr. Dan McKenzie in your last issue. I have been using medical diathermy for these cases for the last 15 months and am in agreement with him on most points. I, too, have found that the cases most suitable for this method of treatment are those of Eustachian catarrh and chronic otitis media with sclerosis of the membrana tympani. My first case was a man, aged 69, who had suffered from deafness and severe tinnitus aurium for 14 years, the latter preventing sleep. His condition was the result of an old chronic otitis media. The tinnitus stopped during the first treatment and never returned, and the deafness has considerably improved. Whereas previously he had been deaf to the ticking of his clock, the mewing of his cat, and the barking of dogs, all these sounds became audible. He once said: "I like to go out and listen to the traffic."

My only criticism of Dr. McKenzie's article concerns the technique. I have tried various methods and am convinced that the following method is the best:—

I adopt the sitting posture and find that the patients prefer to sit than to lie on a couch, also the occurrence of vertigo afterwards is rare. The electrodes consist of two equal U-shaped plates 3 in. × 2¼ in., cut from thin, flexible sheet metal. These are placed on the skull around the meatus and beneath the pinna. The anterior limb of each electrode bears a short "tab," which overlaps the external auditory meatus and makes contact with a plug of cotton-wool soaked in saline and inserted as far as the patient will allow. The metal electrodes are placed *directly* on the skin, good electrical connexion being obtained by means of a thin film of soap lather (shaving soap is the easiest to use). The electrodes are secured by two rubber sponges, one over each electrode, and a rubber bandage, which should be applied to pass over the vertex and the point of the chin.

I believe this method to be superior because: (1) It allows the patient to sit comfortably and with the minimum of restriction in an armchair and, if he wish, to read whilst having his treatment, which should last 15–30 minutes. (2) The electrodes, &c., are simple, and are easily and quickly applied in four minutes and removed in one. (3) The soap lather ensures perfect connexion by eliminating any danger from a greasy skin and uneven current penetration; and also the gravitation and drying-up so common with saline pads. (4) The path of the diathermy current is nearly 3 in. square and traverses the whole of the middle and inner ears and also the Eustachian tubes. A picture of the electrode is to be found in Sampson's "Practice of Physiotherapy."

One other point I must mention; one or two of my patients, particularly the younger cases of "otosclerosis," have improved in their general health and mental outlook. From being dull and listless and somewhat melancholic, they have become cheerful and of a more youthful appearance. If this is not a coincidence it can only be ascribed to the diathermy, as no other treatment of any kind was given.—I am, Sir, yours faithfully,

CEDRIC HILLIARD, M.B., B.Chir. Camb.

William-street, Knightsbridge, S.W., March 26th, 1928.

HYGIENE AT THE ROYAL HOSPITAL SCHOOL, GREENWICH.

To the Editor of THE LANCET.

SIR,—In view of Dr. J. A. Glover's remarks in the discussion on Juvenile Rheumatism at the meeting of the Section of Epidemiology of the Royal Society of Medicine on Feb. 24th (reported in THE LANCET for March 3rd, p. 447), it would seem to be suggested that the Royal Hospital School, Greenwich, has been allowed to exceed the number of boys for which accommodation is adequate. If Dr. Dudley's report is read, it will be seen that, whatever his personal opinion may be, he expressly states that the amount of air space and floor space is adequate according to the most accepted hygienic requirements. It is considerably better than that supplied in many other like institutions. The attack-rate for rheumatic fever in the Royal Hospital School in the Glover report is quoted as being 6 per 1000, in the Dudley report it is noted as 2 per 1000 in 1921, which is the correct number. This lower rate has been maintained since that year. I should be grateful if you would insert this letter, as, though I recognise that no reflection was probably in any way intended, the paragraph containing the remarks to which I am alluding might be construed to mean that those responsible for the health and care of the boys were lacking in the necessary vigilance, and were behind the times.

I am, Sir, yours faithfully,

PERCIVAL M. MAY,
Medical Officer to the Royal Hospital School,
March 23rd, 1928. Greenwich.

STEREO-FLUOROSCOPY.

To the Editor of THE LANCET.

SIR,—The two letters which appear in your issue of last week appear to charge me with a lack of fairness to British Radiology (Mr. W. E. Schall), and to British manufacturers (X-rays, Ltd.). As evidence of unfairness it is stated that apparatus of this kind was made years ago by British firms. But, did not I state in my communication of March 3rd that there was an apparatus similar in principle, designed for use with coils, in London, and I pointed out the difficulty of using that apparatus? I certainly did not state, as does Mr. Schall, that the apparatus was a complete success, or that the problem of stereo-fluoroscopy was satisfactorily solved. I rather agree with X-rays Ltd., that the methods in question did not prove to be of sufficient practical advantage to survive.

I can assure the gentlemen by whom these letters are signed that I yield to no one in my appreciation of the English manufactures, nor in my patriotism for the land of my birth, and if I travel to other countries to see the latest developments in medical or scientific apparatus, and if I publish what I see and hear, it is not with a spirit of unfairness to British manufacturers or lack of patriotism for England, but rather, that patients may have the advantage of the latest and best scientific developments and perhaps, even as the mouse in the fable, to be of some small help to the leonine manufacturers, in stimulating them to further and better efforts.

I am, Sir, yours faithfully,

F. HOWARD HUMPHRIS.

Great Stanhope-street, Park-lane, W.,
March 26th, 1928.

LIVER TREATMENT IN PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—The following extract from a letter recently received from Australia may be of interest.

Dr. S. had treated a lady with signs of pernicious anæmia with poor results. After an absence of some time she put in an appearance at his rooms looking the picture of health. On inquiry as to what had produced this excellent result she said, "I went to a Chinese herbalist, who gave me a powder to take and this is the cause of my cure." The powder on examination looked like desiccated flesh and the patient said it was powdered liver of the carnivorous crow, an old Chinese remedy it appears. On further inquiry Dr. S. found that boys are regularly employed by Chinamen to catch crows for them, so that they may get the liver. Is it that the Celestials have been using for years a remedy which our men have only recently discovered?

Can any of your readers supply the answer? My correspondent is my father, who has recently given up active work in the profession, and Dr. S. is a well-known consultant in Melbourne.

I am, Sir, yours faithfully,

JOHN H. ANDERSON.

Ruthin Castle, North Wales, March 27th, 1928.

LOCAL FAT ATROPHY FOLLOWING INSULIN INJECTIONS.

To the Editor of THE LANCET.

SIR,—It may interest Drs. Carmichael and Graham to hear that I have a patient who developed a local fat atrophy following very large injections of insulin into the left thigh. It is now two and a half years since any insulin has been required and the thigh has returned to normal.

I am, Sir, yours faithfully,

Bridlington, March 26th, 1928. P. D. H. CHAPMAN.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. G. E. Heath to be Surg. Comdr.
Surg. Lt. (D.) F. W. Watt to be Surg. Lt.-Comdr. (D.).

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. S. W. Davidson to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capt. E. S. Cuthbert to be Maj.
R. A. Kennedy to be Temp. Lt.
Temp. Lt. R. J. Monahan relinquishes his commn.

TERRITORIAL ARMY.

Capt. H. A. B. Whitelocke to be Maj.
Lt. O. F. W. Robinson to be Capt.
Lt. F. T. Birkinshaw resigns his commn.

ROYAL AIR FORCE.

The undermentioned Flight Lts. are granted permanent commissions in this rank: J. McM. Wilder and L. I. Hyder.

Temp. Capt. J. M. Jamie (Dental Surgeon, General List) is granted a temporary commission as a Flight Lt., on attachment to the R.A.F.

Flight Lt. C. T. Hastings (Capt., Army Dental Corps.) relinquishes his temporary commission on return to Army duty.

INDIAN MEDICAL SERVICE.

Majors to be Lieut.-Colonels: W. E. Brierley, J. B. Lapsley, C. H. Fielding, W. L. Watson, J. W. Barnett, Madan Lal Puri, R. B. Lloyd, A. C. Munro, Ram Nath Chopra, A. G. Tresidder, G. G. Jolly, H. Stott, A. A. C. McNeill, G. F. Graham, Maneck Dhunjishaw Wadia, T. D. Murison, Sohrab Shapoorii Vazifdar, J. J. H. Nelson, E. S. Phipson, F. F. S. Smith, and T. C. Boyd.

The undermentioned officers retire: Lt.-Cols. T. H. Gloster and L. Reynolds.

ROYAL VISIT TO MILITARY HOSPITAL.

On March 21th the King and Queen paid an unofficial visit to Queen Alexandra's Military Hospital, Millbank. They were received by Col. E. Ryan, the commanding officer, and Miss Osborne, matron-in-chief. The medical and surgical staff and sisters were presented to the King and Queen, who afterwards made a tour of the buildings.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

OFFICES REGULATION BILL.

ON March 20th in the House of Commons Miss WILKINSON asked leave to introduce a Bill to regulate offices and the employment of young persons therein; and for other purposes connected therewith. She said that the measure was designed to extend to people who worked in offices some of the protection that was at present given to those who worked in factories. The conditions in many big cities, especially owing to the great congestion at the present time, were rapidly growing worse, and it was felt that something ought to be done to protect the health of the men and women who worked in those offices. In one of the best and newest offices lately built in the City of London large provision was made for underground office accommodation. In the older buildings in the city where girls worked underground conditions were very bad indeed. They had also in these basement offices the enemy of damp. The effect on health was particularly bad at the present time, because many of these girls worked very long hours and special overtime at quarter days. A girl had written to her giving a description of the office in which she worked. It was only a cubicle with no windows and no ventilation, and five men besides herself worked in that unhealthy place. The girl added that the electric light had had a bad effect upon her eyes and she had been obliged to see an oculist, who said that her eyes were badly strained. One-third of the diseases of those who worked in offices were due to phthisis, and 122 out of every 1000 died from diseases which were caused by working in cramped spaces with bad light, bad ventilation, and very long hours. The Bill recognised the difficulty under which many employers worked at the present time. High rents were making overcrowding worse. The Bill threw the burdern of keeping the offices in a proper condition on the owner, but made provision for adjustment afterwards by the council. The Bill would prevent overcrowding; it would stop any premises being used as underground offices which were not so used on the date when the Bill passed into law, and briefly it made provision for adequate lighting and heating and proper sanitary accommodation.

Leave to bring in the Bill was granted without a division and the Bill was brought in and read a first time.

INVALIDING FROM THE NAVY: TUBERCULOSIS.

On Thursday, March 22nd, on the Report of Navy Estimates for 1928, Rear-Admiral BEAMISH said he wished to return to a subject which he had mentioned twice, that was the question of tuberculosis and the invaliding of men. One could not return to that particular matter too often because it was very serious. He realised that the Admiralty had their hands tied to some extent and that the question of invaliding was a matter for decision by secret and confidential instructions received by the Admiralty from the Treasury. He was not sufficiently conversant with Parliamentary rights to know whether they had any method whereby they could get hold of those instructions and see them. They ought to know more about them than they did at the present time. The Admiralty were condemned to be controlled by these regulations which imposed upon the men of His Majesty's Fleet very severe hardship when they were invalided. The extent of tuberculosis in the Navy had been higher for at least the last five years than it had been in the Army, and the conditions of life in the Navy were very largely responsible for that. He impressed upon the House the real importance of this matter and urged that the question should be adequately looked into and some change made, not only in regard to the actual methods of invaliding men, but in regard to the composition of the boards that invalided them, and in regard to the attributability as to the diseases and injuries for which the men were invalided.

The Incidence of Tuberculosis.

Dr. VERNON DAVIES said that he was tempted once again to press the question of tuberculosis in the Navy on the attention of the House. It was a most serious subject and affected a class of men who were not able to speak adequately for themselves. They had had statistics showing the number of cases of tuberculosis in the Navy and the extremely small percentage which got a pension or were held to be attributable—namely, 3 or 4 or 5 per cent. They could hardly wonder that these poor men who went into the Service physically fit in the prime of their youth and manhood and subsequently came out practically condemned to death must hold that in some way or another the Service had something to do with it. The different incidence of tuberculosis in the Army and the Navy to the detriment of the latter was perhaps not astonishing in view of the

cramped accommodation of the men in the battleships. After the previous debate on this matter in the House recently he looked into the matter further, and he would like to draw attention to a letter which he saw in the newspapers only the previous day, written by a man from Portsmouth, saying that there were 1600 men in that district who had been turned out of the Navy and whose disease had been held to be non-attributable to the conditions of service. He had looked into some statistics, and comparing tuberculosis in the Navy and in civil life, particularly for 1925, he was astonished to find that there was a different incidence in the tuberculosis rate in civil life and in the Navy. In a certain period of civil life between 20 to 25 years of age he thought the incidence of tuberculosis was decreasing, but in the Navy it was increasing. At first sight that would lead one to suspect that there was some condition in the Navy which was causing a change essentially different from what happened in civil life. He was recently informed that a committee was sitting to consider this matter. When he inquired when the last meeting was held he was told that it was some months previously because one of the members had not been very well. If that sort of thing went on this committee would be sitting during the next Parliament, and perhaps the Parliament after that, and he was anxious that something should be done at once. On the lowest computation there were some hundreds of men in this country slowly but surely dying of consumption, men who had served in the Navy and who were convinced that they had contracted the disease there; yet nothing was being done for them, except what they might get from the National Health Insurance scheme—15*s.* a week. A man had to be kept on that. A baby four or five months old could take 10*s.* worth of milk every week. This disease required so much nourishment that it was absolutely impossible for any tuberculosis case to live on the money which came from the National Health Insurance scheme. This state of matters was a scandal to the House of Commons, a scandal to the Admiralty, and a scandal to the country.

Lieut-Colonel HEADLAM (Parliamentary Secretary to the Admiralty), replying to the debate, said that the question of invaliding from the Navy was exercising very earnest attention and a committee had been appointed to go into the whole of the details. The whole question of hygienic conditions in the Navy had been referred to a consultative committee of experts outside the Admiralty.

The Report of the Navy Estimates was agreed to.

CONSOLIDATED FUND (NO. 1) BILL: DISTRESS IN COAL-MINING AREAS.

IN the House of Commons on March 26th, on the Order for the second reading of the Consolidated Fund (No. 1) Bill,

Mr. RAMSAY MACDONALD raised the question of distress in the coal-mining areas. He said that the Labour Party had recently sent a committee to inquire into the position in South Wales. In one mining valley they found school-children suffering from lack of nourishment and there was a most distressing lack of boots and stockings. Two salient points in the survey of the County of Monmouth were, first, the constant deterioration of the financial position of the people, and secondly, the deterioration of the human beings who had to go through the present terribly trying conditions. In Blaina, 423 out of 3045 children were sub-normal from various causes and the health of the mothers was steadily growing worse. The House could not allow this to go on. Many of these people, also, were falling out of National Health Insurance, which would result in the loss not only of all benefits, but ultimately of the old-age pension at 65 and the widows' and ophans' allowances. The first duty was to save the infants. They must see that all maternity and infant welfare equipment was up to date. They must also face the question of the provision of boots and shoes and clothing, and of keeping the children at school. The community should take these obligations on its shoulders and not leave it to private charity.

The Help Given by Public Bodies.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said that whatever measures they might take ultimately to cope with the problem, the process must be slow. They had to contemplate some period during which the position must be most carefully and sympathetically watched. There were various agencies and public bodies in every district whose duty it was to look after persons who were so impoverished that they were no longer able to look after themselves. He had to ask himself whether these agencies in South Wales were breaking down and whether the conditions there were so dangerous to health, or so different from those in other large industrial areas, where there were unemployment and distress, as to justify the employment of fresh agencies to supplement those already in existence. The report of the two Labour Members who went to South Wales was singularly moderate in its comments on the state of the health of the people there. They could not have such distress, unemployment, and impoverishment without some effect on the health of the people, but, while they must keep a very careful eye on what was happening to the public health, and especially the health of the children and expectant mothers, there was no reason up to the present to believe that it had reached any very disquieting or serious point. Until he was satisfied that the efforts of the people of South Wales to help was really exhausted he was most unwilling to entertain the idea of using for the undoubtedly serious shortage of boots and clothing among the children public funds which had to be paid for by other districts which also had distress to deal with. The Government's policy was to transfer the population from hopelessly derelict areas to other places.

Mr. PETHICK-LAURENCE said that the boards of guardians were refusing to find money for certain things which the doctors, ministers of religion, and Chambers of Commerce were urging them to do in the distressed areas. Where children were ill-nourished, school meals were provided by the local authority. On Saturdays and Sundays, the teachers took the food to the children in their homes, but the local guardians, in every case where that was done, deducted 2*s.* a week out of the money which they might give in relief to the families of the children so fed. This neutralised the benefit which the feeding conferred on the children. He urged that the rules should be relaxed, and that the guardians should be instructed not to deduct this money. They ought also to be allowed to provide boots for the children who needed them.

The Bill was read a second time.

COÖRDINATION OF THE FIGHTING SERVICES.

On March 27th, on the Order for the third reading of the Consolidated Fund Bill,

Sir R. HUTCHISON suggested an alteration in the administration of the fighting services in order to secure greater coördination and control than existed at the present time. During the war, he said, control was exercised by the War Cabinet, but since the Armistice that body had disappeared and nothing had taken its place. The fighting services had dropped back into their pre-war position, each being under a departmental chief. If they could secure unified control it would be possible to get a far better application of the forces wherever they were required in the world. There would be considerable advantage in such a system in regard to hospitals and other matters. It was also possible that they might get a wider and bigger medical service by bringing the medical services of the Army, Navy, and Air Force under one control.

Hospital Coöperation.

Mr. BALDWIN (Prime Minister) said that he would like to show, by way of illustration, what was being done by coöperation between the hospitals at the present time. In that respect there had been a move forward in the last year or two. The Royal Air Force maintained no separate hospital at home, except the two big isolation stations at Halton and Cranwell. They had no hospital in the neighbourhood, but there was a small officers' hospital of 25 beds at Uxbridge for dealing with flying accidents which might occur at that centre. But abroad, where the Royal Air Force were in control, they maintained their own hospitals, and during 1926 there were up to 3000 admissions of personnel of the Navy, the British and Indian Armies, and local forces of Iraq and Palestine treated in the Royal Air Force hospitals. The military hospitals at Cosham and Devonport were closed in that year, and arrangements were made for the sick of the Portsmouth military area and of the military stations in the Devonport area to be treated in the Royal Victoria Hospital, at Netley, or the Royal Naval Hospital, at Haslar, and the Royal Naval Hospital, at Plymouth. No less than 3000 of the Royal Air Force personnel received treatment in the Naval, Army, and Civilian hospitals during the last 18 months. In the same way, there had been considerable treatment of Air Force and Army patients in the Naval hospitals, both at home and abroad. The possible pooling of other hospital arrangements had been examined and, in some cases, had been found impracticable, but there were some places which were still under investigation. The Air Force made no general contracts in regard to medical supplies itself. They took the existing Army contracts, and standardisation and pooling had been agreed to in principle in regard to the ambulance trains, and the details were being worked out. The India Office were being invited to coöperate and a number of other matters were being studied now by the general medical services, &c. In research coördination was effected through three coördinating boards for chemistry, physics, and engineering.

The Bill was read a third time.

PETITION AGAINST MOTOR TAX.

Colonel HOWARD-BURY presented to the House of Commons on March 27th a petition from the Automobile Association signed by 920,000 motor owners and users. The petitioners stated that they were gravely concerned at the continuance of the system of motor taxation imposed by the

Finance Act, 1920, which was inequitable and unjust to the vast majority of motor users. They humbly prayed that the present method of motor taxation should be amended in favour of a flat rate duty on petrol plus a small registration fee.

HOUSE OF LORDS.

TUESDAY, MARCH 27TH.

PUBLIC HEALTH (DESTRUCTION OF VERMIN) BILL.

Lord STRATHSPEY, in moving the second reading of the Public Health (Destruction of Vermin) Bill, explained that the measure provided that if it appeared to the local authority on the certificate of a medical officer, or sanitary inspector, that any articles in any premises used for human habitation were infested with vermin, or were likely to be so infested, the local authority, at their expense, should cause those articles to be cleansed, disinfected, or destroyed. If it appeared to the local authority, on the certificate of the medical officer or the sanitary inspector, that any premises used for human habitation were infested with vermin, the local authority should give written notice to the occupier, or the owner if the premises were vacant, requiring him to cleanse the premises. The notice might require the removal of wallpaper and other covering on the walls. As a penalty for default, a fine not exceeding £5 was provided, and a daily penalty of 10s., and the local authority might do the work and recover the cost. Clause 3 provided that on the application of any person, the local authority might take such measures as they deemed necessary to free that person and his clothing from vermin. Where it appeared to the local authority, on a report from the medical officer, that any person or his clothing was infested with vermin and that person consented to be removed to a cleansing station, the local authority might cause him to be so removed. If he did not consent, a petty sessional court, if satisfied on the application of the local authority that it was necessary, could make an order for his removal to the cleansing station. It was provided that the cleansing of females should be effected only by a registered medical practitioner, or by a woman duly authorised by the medical officer. As soon as the occupier of a house became aware that it was infested he was required to send notice to the medical officer of health, and if a person became infested he must notify the medical officer.

Rejection Moved.

Lord BANBURY moved the rejection of the Bill, which, he said, was absolutely unnecessary. It enacted clauses already in existence, and some of the new clauses converted the private individual into a police officer. They compelled him to interfere in other people's business, and to do the business of the local authorities, who already had powers through their medical officers and sanitary inspectors to find out if people had got vermin on them or not.

Viscount GAGE said that the Minister of Health was not convinced that any real defect in regard to these matters existed under the present law.

After further discussion the Bill was rejected without a division.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 21ST.

Training and Supply of Midwives.

Sir ROBERT THOMAS asked the Minister of Health whether he was prepared to institute an inquiry into the supply, pay, and training of midwives, with special reference to their distribution in rural areas.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is taking steps to set up a committee to enquire into the general question of the training and supply of midwives.

THURSDAY, MARCH. 22ND.

Diphtheria in London Elementary Schools.

Mr. OTHO NICHOLSON asked the Minister of Health if he was aware that parents of children attending elementary schools in the County of London were not notified of cases of diphtheria occurring in such schools and given an opportunity of isolating the child who had been attending; and that there was no disinfection of class-rooms in which cases had occurred; and what action he proposed to take.—Lord EUSTACE PERCY replied: The arrangements made by the London County Council for dealing with cases of diphtheria occurring in elementary schools are based on experience extending over 20 years, and I am advised that all reasonable precautions are taken. I do not, therefore, think that any intervention on my part is called for.

Death of a Child after Operation.

Mr. MACQUISTEN asked the President of the Board of Education whether he would inquire into the circumstances of the death of the son of Mrs. Maggie Potts, of Oulton, Wigton, Cumberland, who was a healthy child in Oulton school until, without the consent and in spite of the protests of his mother, he was operated on for tonsils and adenoids, with the result that he died, and under what authority such action was taken.—Lord EUSTACE PERCY replied: I have already received a report on this case from the school medical officer and I am sending my hon. friend a copy. I understand that the concurrence of the boy's mother was obtained before the operation was performed. The boy was operated upon at a hospital by a specialist; he was kept in the hospital for two nights after the operation, and was apparently quite well when discharged. I am advised that death was due to complications which subsequently arose, and that this regrettable occurrence was not due to any defect or failure in the authority's arrangements for treatment.

MONDAY, MARCH 26TH.

Medical Staff in the Crown Colonies.

Mr. WALTER BAKER asked the Secretary of State for the Colonies the authorised strength of the official medical staff in each of the Crown Colonies; whether any colony had a staff which was not up to strength; and what steps were being taken to deal with any shortage.—Mr. AMERY replied: As regards those Colonial medical appointments which are usually filled by recruitment in this country, it is only in the West African Medical Staff that the number of vacancies is considerable. For most other Colonial medical services there is a surplus of candidates. When vacancies occur they are advertised in the medical and other press and in filling appointments the Colonial Office receives assistance from the Universities, the Medical Schools, and the British Medical Association. Latterly a number of applications have been received from Dominions candidates. The following figures give the authorised strength (A.S.) and vacancies (V.) on the official medical staff in the various Crown Colonies:—

Colony.	A.S.	V.	Colony.	A.S.	V.
S.A. High Commission—			W. Pacific High Commission—		
Basutoland	11	0	Gilbert and Ellice Islands	5	0
Bechuanaland	6	0	Brit. Solomon Isl.	3	0
Swaziland	2	0	St. Helena	2	0
Kenya	94	6	Hong-Kong	18	4
N. Rhodesia	16	1	Wei-hai-Wei	2	0
Nyasaland	22	0	Straits Settlements and Malay States	310	10
Somaliland	11	0	Bahamas	9	0
Tanganyika	114	4	Barbados	11	1
Uganda	77	2	Jamaica	57	0
Zanzibar	19	0	Cayman Island	1	0
Gambia	6	0	Turks and Caicos Isl.	2	0
Gold Coast	100	20	Leeward Islands	22	2
Nigeria	161	27	Trinidad	39	0
Sierra Leone	26	0	Windward Islands	19	1
Cyprus	38	1	Bermuda	4	0
Gibraltar	7	0	British Guiana	43	0
Palestine	55	1	British Honduras	8	0
Ceylon	363	0	Falkland Islands	3	0
Mauritius	18	1			
Seychelles	5	0			
Fiji	68	0			

Note.—The figures of authorised strength relate to the whole establishment of medical officers, both those who are recruited from this country and those who are recruited locally. The figures of vacancies relate only to appointments usually filled from this country, as it is only in regard to these that definite information is available.

Slum Clearances.

Sir WILFRID SUGDEN asked the Minister of Health what steps he was taking to assist slum clearance by alterations to Section 46 of the Housing Act, 1925; if the improvement scheme in Leeds, held up for two years by this section, was under his consideration as to its results; and what steps he proposed to take as to other schemes in the country disadvantageously affected also by the same section.—Mr. CHAMBERLAIN replied: The whole subject of slum improvement is receiving my personal consideration, but I am not yet in a position to state when it will be possible to bring in legislation; the report made following the inquiry into the particular scheme to which my hon. friend refers has been considered and my decision will be communicated at an early date.

TUESDAY, MARCH 27TH.

Notification of Infectious Diseases.

Mr. SHEPHERD asked the Minister of Health whether he would consider the question of so amending the Infectious Disease (Notification) Acts that any suspected infectious disease would have to be reported without awaiting the results of a bacteriological examination, where such disease was infectious in its early stages.—Mr. CHAMBERLAIN replied: No, Sir. The Acts in question do not require notification to be delayed pending the results of a bacteriological examination, and notifications are frequently made solely as the result of clinical examination.

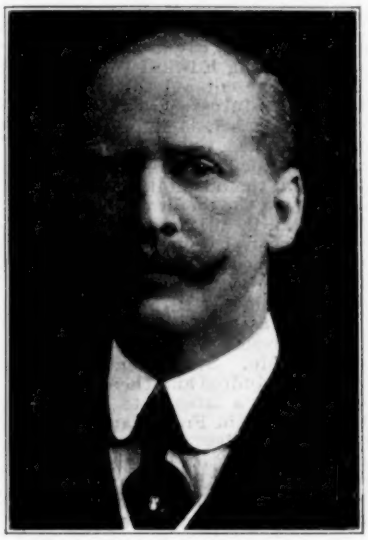
Obituary.

HUGH JAMES MOORE PLAYFAIR, M.D. LOND., F.R.C.P. LOND., F.R.C.S. ENG.,

CONSULTING OBSTETRIC SURGEON TO KING'S COLLEGE HOSPITAL.

THE death was announced last week of Dr. Hugh James Moore Playfair, the well-known obstetrician, which occurred at his house in London on March 25th, in the sixty-fourth year of his age. For the past few years his health had not been good, a fact which led to his retirement from the post of obstetric surgeon to King's College Hospital just three years ago.

Hugh Playfair was the son of General Archibald Playfair and the cousin of the well-known gynæcologist, William S. Playfair. He was born in Edinburgh, and received his early education at Fettes College, whence he proceeded for medical training to the schoolof King's College Hospital. He qualifiedas L.R.C.P. Lond.,M.R.C.S. Eng. in 1890, and graduated M.B. Lond. in the same year, proceeding to the M.D.degree in 1892. He held the usual resident appointments at the hospital, after which he took out a post-graduate course in Berlin, and returning to London was appointed curator of the anatomical and medical museum at his hospital and assistant demonstrator of anatomy. He had already been house accoucheur, and now decided to adopt the career of obstetric physician. He took the M.R.C.P. Lond., and three years later the F.R.C.S. Eng., and was also appointed physician to the Royal Waterloo Hospital for Women and Children. He filled the post of obstetric tutor in the medical school of King's College Hospital, and in 1904 became assistant obstetric physician and lecturer on practical obstetrics. From this time onward for 30 years Playfair's life was fully absorbed in professional work along his selected lines. He became obstetric and gynæcological surgeon to King's College Hospital; he examined in his subjects for the Conjoint Board of the Royal Colleges, and he wrote upon it in hospital and society reports, and occasionally in the medical journals; while in the medical school he was remarkable for the assiduity with which he taught his pupils as well as for the practical interest which he took in their lives. He held, in addition, gynæcological posts at the Metropolitan Hospital and at no less than three cottage hospitals, so that his practical experience became very large and varied.



DR. HUGH PLAYFAIR.

Photograph by Lafayette.

Mr. W. Gilliatt writes: "Hugh Playfair's death at the comparatively early age of 63, leaves a gap amongst King's men that cannot be filled. There was no one whose opinion was more eagerly sought, whether upon a difficult case, at a medical board, or by a student planning his career. Playfair brought to bear on each problem the same lively interest and reasoned judgment. He possessed the quality, rare in our day, of courtliness unspoiled by affectation, which made him hosts of friends in every walk of life. Many generations of students and nurses will grieve the loss of a most able and patient teacher. His lectures and ward rounds were always crowded, and the subjects so simplified by him as to become clear even to the newest clerk. When teaching he gave freely of time and effort. Though energetic by nature and brisk in manner, he never appeared in a hurry, and no contretemps ever ruffled him. In the midst of a busy life, which daily became more exacting, he kept a close interest in the athletic side of the medical school. He frequently attended the hospital Rugby football matches, and was a keen supporter of the medical and musical societies. Even after his retirement from the hospital three years ago, owing to failing health, he never lost touch with its affairs, maintaining the same keen interest in the hospital and medical school. There is little doubt that Playfair excelled in the clinical side of his special subject, and to those who had the privilege of working with him, it very soon became obvious that his opinion in the difficulties of gynæcology and obstetrics was second to none. He was unusually expert in obstetrics, and to see him carrying out practical obstetric manipulations was a wonderful lesson. During the many changes which followed each other in his branch of medicine, Playfair always kept himself abreast of thought and practice, as gynæcology developed from a branch of medicine to a surgical subject.

"As a colleague he was ideal, encouraging, always interesting and unusually generous to his juniors, who will sorely miss his balanced opinion and wise counsel. The feeling of all of us at King's is that we have lost a valued friend, a part of the institution itself, rather than a member of the staff. His charm of manner, cheerful friendliness, and deep sympathy were felt by all who worked with him. It can truthfully be said of Hugh Playfair that he never said a spiteful thing nor did a mean one."

In private life Dr. Hugh Playfair was known as a learned connoisseur of the arts. He married in Paris in 1905 Miss Eva Journault, by whom he had no children, but he adopted the son of his late younger brother, Arthur Playfair, the well-known actor; the boy is now a naval cadet. Dr. Playfair was an Associate of King's College and a Chevalier de la Légion d'Honneur. His death is regretted by a large number of personal friends and of patients, who owed much to his professional skill and advice.

LIONEL RICHARD FIFIELD, F.R.C.S. ENG.

ON March 21st, as we recorded last week, Mr. L. R. Fifield died from injuries sustained on the previous evening, when he and his wife were knocked down by a motor-car. The career thus ended was of exceptional promise, and his death at the age of 30 is felt with deep regret by friends at the London Hospital and elsewhere.

Fifield's medical work hardly began until the end of the war, and it was as a combatant that he enlisted in the Army. After serving with distinction in France, where he was wounded and received a commission, he entered the London Hospital in January, 1919. He had then only passed the preliminary scientific examination of the Conjoint Board, but succeeded in obtaining the M.R.C.S. Eng. in October, 1921, after two and a half years' work instead of the the usual four years. In December, 1923, less than four years after beginning work for the second professional examination, he became a Fellow of the Royal College of Surgeons of England at the early age of 25. He was soon recognised as a man of unusual ability, and after qualification held various resident appointments, including that of house surgeon to the Surgical Unit. For some years he was demonstrator of anatomy, and in 1925 was appointed surgical first

assistant to Mr. Hugh Lett and Mr. W. S. Perrin, a post which he held at the time of his death.

Clear reasoning and lucid explanation made him an excellent teacher, and he had already published two useful books, one on infections of the hand, and the other on minor surgery. The same qualities of clearness and brevity are seen in them, as in his contributions to our columns on diverticulitis and other subjects. For an essay on New Growths of the Bladder he was recently awarded the Buckston Browne Prize of the Harveian Society. This embodies an account of experiments on animals in connexion with the transplantation of the ureters into the intestine, and is being published in book form; it was in the press at the time of his death. A rapid worker, Fifield was endowed with a remarkable memory and was a quick, yet careful, operator. His judgment was good and his fine physique gave him an energy which was seemingly inexhaustible. In the Law Courts he was acquiring a reputation as a man of integrity, a reliable witness, and a surgeon of sound knowledge and argument. This exceptional equipment for his profession was associated with a friendly and unassuming nature. His juniors found him easy to get on with and learnt the more from him because he was easily approachable; whilst his keen ambition as a surgeon was never allowed to affect his generous and genial outlook on life.

The funeral, on March 23rd, was attended by a large number of the staff, residents, and students of the London Hospital.

RICHARD JOHN KINKEAD, M.D. DUB.

THE death of Dr. R. J. Kinkead, professor of obstetrics and gynæcology at University College, Galway, occurred at an advanced age on March 18th. He had been in failing health for some years, though he continued to work until a few months ago. Educated in the school of the Royal College of Surgeons, Dublin, and at Trinity College, Dublin, Dr. Kinkead obtained his qualifications at an early age, and at once began practice in Tuam. Some ten years later, in 1876, he was appointed professor of obstetrics in Queen's College, Galway, then a constituent college of the Queen's University of Ireland. He retained that post until the time of his death, through the many changes the College has undergone; but for the last few years many of his duties were performed by a deputy. He was also gynæcologist in the County Galway Hospital, and for many years medical officer of H.M. Prisons at Galway.

Dr. Kinkead's ability and character speedily gained for him a commanding position in the medical profession of the West of Ireland, and he had a large consulting and general practice. He took an important share in professional organisation, and was President of the Irish Medical Association for a term. For many years he was a member of the Council of that body, and was vice-president for Connaught. On his retirement from active work he was elected an honorary member of the Association in recognition of his manifold services to the profession. A man of solid intellect, he always found time for reading, and he often surprised his friends by a knowledge of unexpected by-paths in literature and art. What was most impressive about him, however, was his independence and his strength of character. He accepted his ideas from no one. He made up his mind deliberately and thoughtfully, and always with consideration for the views of others, but once his mind was made up it was difficult to move him. He had a high idea of the dignity of the medical profession, and no one in the Ireland of his day did more by example to make others respect the profession. As medical officer of the prison he allowed no interference from anyone—however high in the official world—with what he conceived to be the powers and prerogatives of the medical officer. He held that it was the medical officer's duty to stand between the rigour of prison routine and a sickly or delicate prisoner, and many of the political prisoners who were under his care at one time or another expressed their deep respect for his humanity and independence. By the people of the West of Ireland and by his professional colleagues he was equally respected. In his younger days he frequently contributed to the medical journals, and he wrote a useful book, "The Irish Medical Practitioner's Guide."

Dr. Kinkead was twice married, his second wife dying a few years ago. He had two sons, both of whom lost their lives as young men; one of them, an officer in the Royal Army Medical Corps, being killed during the war. Four daughters survive him.

HENRY GOFF KILNER, M.B., B.S.LOND.,

HON. SURGEON TO THE WEST SUFFOLK GENERAL HOSPITAL.

Dr. Henry Goff Kilner, who died at the age of 42, on March 17th, at his home in Bury St. Edmunds, was the second son of Dr. Charles Scott Kilner, and the fourth in succession of that family to practise medicine in the city. Educated at King Edward VI.'s School in Bury, Henry Goff Kilner entered the Middlesex Hospital where, after a successful career as a student, he gained the senior Broderip scholarship. Having qualified in 1909 at the English Colleges, he held the appointments of house physician, house surgeon, and obstetric house physician at the hospital, and later was demonstrator of anatomy in the medical school. He graduated M.B., B.S. Lond. in 1912, and held an appointment at St. Peter's Hospital, Covent Garden. On the outbreak of war, he was gazetted Second Lieutenant to the 5th Suffolks. He served as a combatant till the Army Order of the summer of 1915 requisitioned medically qualified men to associate themselves with the R.A.M.C., and was present at Gallipoli, where he served in a hospital ship. Subsequently he was on the headquarter staff at Mudros and then in Egypt with the 29th Division. At a later date he served with the 7th Field Ambulance in France and became D.A.D.M.S. to the 2nd Cavalry Division. While there he was awarded the Croix de Guerre and was twice mentioned in despatches. Returning to Bury St. Edmunds after the war, Kilner acted as surgeon to the hospital for disabled men under the Ministry of Pensions, and was elected honorary surgeon and honorary radiologist to the West Suffolk General Hospital, an appointment which he was holding at the time of his sudden death.

An intimate friend writes: Kilner could never spare himself where he felt that anyone was in need of him. His kindness was unbounded and it is many a lame dog he has helped over a stile. The hundreds who thronged the churchyard at the funeral bore eloquent testimony to the regard and respect of those whom he had benefited. He was the loyalest of friends and a cheerful and charming companion. The wind, the sun, and the open country were as the breath of life to him. He was a keen naturalist and archæologist, and never happier than when tramping over his native soil in search of some rare bird or showing a friend one of the many architectural glories with which his countryside abounds. He loved life and his spirit of enjoyment was infectious.

Dr. Henry Kilner married in 1916 Olive, daughter of the late Mr. R. T. Simpson, of Horsecroft, Bury St. Edmunds, who survives him with two young children.

ALFRED THOMAS TUCKER WISE, M.R.C.S.ENG., M.D. BRUX.

Dr. Tucker Wise, who died at a nursing home in London after a few days' illness on March 23rd, was in his eightieth year, having been born at Plymouth on Feb. 4th, 1849, son of Thomas Tucker Wise, Fleet Paymaster, R.N. He was educated at Eastman's Royal Naval Academy with a view to following his father, and had actually reached the grade of assistant paymaster before deciding for a medical career. He took his clinical studies at St. Mary's Hospital, London, qualifying in 1876, and filling a

series of house appointments at the hospital, where he was also vice-president of the Medical Society. At the same time he passed the M.D. Brux. with honours in obstetric medicine, and proposed to settle in London, towards which end he obtained appointments at the Western General and Kilburn Dispensaries, and the Infirmary for Consumption in Margaret-street. Consideration for his own health, however, led to a period of residence at various places in the High Alps, among them the Kursaal at Maloja, where he acted as resident physician. A contribution in 1881 on the Effects of Altitude on Phthisis was one of the first serious studies of the Alpine climate, and was followed by a brochure entitled "Alpine Winter in its Medical Aspects," which ran through five editions. Having obtained the Swiss Federal diploma by examination at Geneva University in 1891 Dr. Wise became one of the small group of British medical men at liberty to practise his profession in any part of Switzerland, and thereafter he regularly wintered at Montreux, where he had a large seasonal practice. Here he devised a postural method of treating pulmonary tuberculosis which encouraged drainage of the lung and induced artificial hyperæmia of the apex, and no doubt the views which he then expressed, in common with Dr. W. Ewart and others, ameliorated the lot of patients unable to empty the contents of bronchiectatic cavities other than by troublesome bouts of coughing. His interest in the physiology of climate was not limited to the Alps, and he addressed American medical congresses on more than one occasion on the climate of the Balearic Islands and other southern stations in Europe. During the war Dr. Wise acted as medical superintendent to the Devon County Sanatorium; recently he had been living in retirement at Strete, near Dartmouth. His favourite recreations were physical labour in the country, especially woodwork and forestry, and he was reputed something of an expert at billiards. His wife was a daughter of Mr. W. Hayne Maunder, of Malahide.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful in the undermentioned subjects:—

Surgery.—P. C. Basu, Calcutta; M. Hurwitz, Leeds.
Medicine.—E. E. Bowen, Middlesex Hosp.; K. J. M. Graham, Charing Cross Hosp.; H. J. Harcourt, St. Thomas's Hosp.; M. Hurwitz, Leeds; N. S. J. Roberts (Section II.), Bristol and Royal Free Hosp.
Forensic Medicine.—K. D. C. Beckitt, Charing Cross Hosp.; E. E. Bowen, Middlesex Hosp.; M. Hurwitz, Leeds; H. S. Marks, Guy's Hosp.; E. O. Watson, St. Bart.'s Hosp.; C. C. F. White, Guy's Hosp.; W. Ziv, Bâle and London Hosp.
Midwifery.—H. W. Maurer, St. Mungo's, Glasgow; C. K. McCoan, St. Mary's Hosp.; L. W. Sanders, Manchester and Charing Cross Hosp.; W. Ziv, Bâle and London Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: E. E. Bowen, H. J. Harcourt, and N. S. J. Roberts.

VICTORIA UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates have satisfied the examiners:—

DIPLOMA IN PUBLIC HEALTH.

W. C. V. Brothwood, Miriam Florentin, Thomas Peirson, J. B. Wiley.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Part I.—Richard Handley, J. E. Howie, W. H. Shepley, Harry Stafford.

The Dauntesey senior medical scholarship has been awarded to R. V. Wright, and the Dauntesey junior medical scholarships to C. H. Gray and Philip Zimmerman.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were approved:—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

N. J. Barton, R. V. Berrington, E. O. Fox, Norah M. Walker.

DIPLOMA IN TROPICAL HYGIENE.

R. R. Evans, W. J. Laird, H. V. R. Miller, G. H. Pearson, J. H. Pottinger, S. A. Wilkinson.

FINAL EXAMINATION FOR M.B. AND CH.B. DEGREES.

Part I.—J. D. Bright-Richards, J. P. Flanagan.
Part II.—A. L. Beresford, A. E. Carrol, A. Gardner, W. W. Gerrard, G. A. Talwrn-Jones.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An election to fill four vacancies on the Council of the College will take place on July 5th, and the list of candidates is now closed. The vacancies occur through the death of Mr. Thelwall Thomas, and the retirement in rotation of Sir Anthony Bowlby, Sir D'Arcy Power, and Mr. F. J. Steward, a vice-president of the College. Mr. Steward offers himself for re-election, and the other candidates, in order of seniority as Fellows, are: Mr. L. P. Gamgee, Mr. R. G. Hogarth, Mr. T. P. Legg, Mr. H. W. Carson, Mr. J. P. Lockhart-Mummery, Mr. Russell Howard, Sir Crisp English, Mr. Harold Wilson, Mr. C. C. Choyce, Mr. R. E. Kelly, and Mr. Robert Milne.

UNIVERSITY OF EDINBURGH.—The Senate has decided to confer the degree of doctor of laws on Sir John Rose Bradford, F.R.C.P. Lond.; Dr. George Lovell Gulland, formerly professor of medicine, Dr. James Haig Ferguson, formerly senior lecturer in midwifery, and Dr. Robert A. Fleming, formerly senior lecturer in clinical medicine in the University; Mr. H. S. Wellcome, founder of the Wellcome Research Laboratories and the Wellcome Bureau; and Dame Mary Scharlieb, M.D.

SWINEY PRIZE FOR MEDICAL JURISPRUDENCE.—The next award of the Swiney prize, which consists of a cup, valued at £100, and money to the same amount, will be made in January, 1929. The award is made jointly by the Royal Society of Arts and the Royal College of Physicians on every fifth anniversary of the death of Dr. Swiney, and is given for the best published work, alternately, in Medical and General Jurisprudence. The award in 1929 is offered for a work in Medical Jurisprudence. Particulars may be had from the Secretary of the Royal Society of Arts, John-street, Adelphi, London, W.C. 2.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on March 21st Mr. W. W. Jameson, M.D., M.R.C.P., was appointed as from Jan. 1st, 1929, to the University Chair of Public Health, tenable at the London School of Hygiene and Tropical Medicine. Dr. Jameson received his medical education at Aberdeen University, the Rotunda Hospital, Dublin, and University College, London. He graduated in Arts at the University of Aberdeen in 1905, and in Medicine, with distinction, four years later. In 1912 he proceeded to the M.D. Degree with commendation, and in the following year he became M.R.C.P. Lond. From 1914–19, having taken the D.P.H., Dr. Jameson held the offices of Assistant and Lecturer in the Department of Hygiene at University College, London, and Assistant and Deputy Medical Officer of Health for the Metropolitan Borough of Stoke Newington. From 1915–19 he was on war service and was mentioned in dispatches. In 1919 he returned to University College, and in 1920 was appointed Medical Officer of Health and School Medical Officer for Finchley, and later Deputy Medical Officer of Health for the Metropolitan Borough of St. Marylebone. Whilst holding these appointments he studied law and was called to the Bar in 1922. In 1925 he was invited by the Town Council of the Borough of Hornsey to become their Medical Officer of Health and School Medical Officer, which posts he still holds, and a year ago he took over the office of Medical Superintendent of the Hornsey, Finchley and Wood Green Joint Isolation Hospital. Since 1926 he has also been Lecturer on Public Health and Preventive Medicine at Guy's Hospital Medical School.

The degree of D.Sc. in Anatomy was conferred on Mr. W. E. Le Gros Clark, university professor of anatomy at St. Bartholomew's Hospital Medical College, and the degree of D.Sc. in Biochemistry on Mr. F. W. Fox for a thesis on sterol metabolism.—Dr. John Fawcett has been elected chairman of the committee of medical members of the Senate, and Sir John Rose Bradford, F.R.S., vice-chairman of the University College Committee.

Mr. Walter Spencer proposed, and Dr. Graham Little, M.P., seconded, a resolution "That the attention of the Senate be drawn to the limitations placed upon the medical education of women undergraduates and that a committee be appointed to consider the question and report to the Senate thereon." This motion was carried and the committee was constituted as follows: Sir William Beveridge (vice-chancellor), Prof. S. L. Loney (chairman of Convocation), Prof. L. N. G. Filon, F.R.S. (chairman of the Academic Council), Dr. Graham Little (chairman of the External Council), Sir Holburt Waring (chairman of the Finance Committee), Mr. Walter Spencer, the Rev. W. R. Matthews (Dean of King's College), Prof. W. P. Halliday (principal of King's College), Sir Andrew Taylor (chairman of the Managing Committee, University College); Miss Ethel Strudwick (principal of St. Paul's School for Girls), and Miss Margaret Tuke (principal of Bedford College for Women).

AFTER April 2nd the East End Mothers' Lying-In Home will be known as the East End Maternity Hospital.

UNIVERSITY OF OXFORD.—Dr. C. G. Douglas has been reappointed demonstrator in general metabolism, and Dr. C. W. Carter has been appointed demonstrator in biochemistry.

UNIVERSITY OF DUBLIN.—The honorary degree of Master of Surgery is to be conferred on Sir John Bland-Sutton.

Sir Humphry Rolleston, Regius Professor of Physic in the University of Cambridge, has been made an honorary doctor of laws of Jefferson Medical College, Philadelphia.

ROYAL SOCIETY OF MEDICINE.—The Society's house and library will be closed from Thursday, April 5th, to Tuesday, April 10th, both days inclusive.

MEDICAL GOLFING SOCIETY.—The semi-finalists in the society's spring knock-out tournament are: E. Laming Evans, G. Dawson, A. Scott-Gillett, and R. A. Woodhouse.

ROYAL NAVY MEDICAL CLUB.—The annual dinner will be held at the Trocadero Restaurant, Piccadilly-circus, London, on Thursday, April 26th, at 7.30 P.M., for 8 P.M. Members who wish to be present should inform the hon. secretary of the club, Queen Anne's Chambers, Tothill-street, S.W. 1, not later than April 18th.

DENTAL OFFICERS IN THE ROYAL NAVY.—The following candidates were successful in a recent competition for commissions as dental officers in the Royal Navy: William Holgate, P. S. Turner, T. G. C. Emberson (Guy's), and A. A. Gardner (Dub.).

ROYAL ACADEMY OF MEDICINE IN IRELAND.—On March 22nd, in the Hall of the Royal College of Surgeons, Dublin, Colonel W. P. MacArthur delivered a lecture on Medical References in Pepys. The lecture, which dealt in some detail with the history of plague in England and Ireland culminating in the Great Plague of 1665, and with the prevalence of small-pox in the seventeenth century, was followed with great interest.

MAUDSLEY HOSPITAL.—A series of six clinical demonstrations of types of mental disease has been arranged by the London County Council. They will be given at the hospital, Denmark-hill, London, S.E., by the medical superintendent, Dr. Edward Mapother, on successive Wednesdays, at 2.30 P.M., beginning on April 25th. The series will be illustrated by numerous cases.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Friday, April 13th, at 5 P.M., in the Sessions House, Maidstone, when Dr. Alfred Greenwood will open a discussion on the Health of Hop-pickers and the Sanitation of Hop-pickers' Encampments. Prof. A. Bostock Hill will take the chair. On the following day visits will be paid to hop-pickers' encampments and hospitals. Those wishing to attend the discussion and visits should notify Dr. A. Greenwood, Sessions House, Maidstone, not later than April 6th.

THE death is announced, on March 26th, suddenly, at Eastbourne, of Dr. William Muir-Smith, J.P., at the age of 67. Dr. Muir-Smith was a native of Irvine, Ayrshire, and was educated at Glasgow University, qualifying in 1884. He was in practice at Bourton-on-the-Water before settling in Eastbourne, where he spent practically the whole of his professional life. Some twenty years ago he contributed an article to our columns, dealing with the ethical side of contract practice on lines which later became accepted policy.

WOLVERHAMPTON AND DISTRICT CLINICAL CLUB.—The first general meeting of this club was held at the General Hospital on Tuesday, March 20th, Dr. S. C. Dyke in the chair, and 36 members present. Discussion centred round the constitution of the club, which is designed to give members an opportunity for exchanging experiences and opinions in an informal way. The next meeting will be held at the General Hospital, Wolverhampton, on Tuesday, April 17th, at 8.30 P.M. The hon. secretary is Dr. R. L. Mackay, Woodfield-avenue, Wolverhampton.

EXTENSION OF ANCOATS HOSPITAL.—The annual report of this hospital proposes that advantage should be taken of its approaching centenary to appeal for help for extensions. The present 114 beds and single operating theatre are stated to be quite inadequate to an accident and urgency claim of over 20,000 cases per annum. On the analogy of the 118 voluntary hospitals reported upon by the British Red Cross Society the facilities should be treble what they are. It is hoped to raise at least £100,000 to provide new casualty, X ray, and massage departments, two operating theatres, a laundry, and the additional accommodation required for nurses and domestic staff.

ROAD ACCIDENTS AT LEEDS INFIRMARY.—At the annual meeting of this institution it was stated that last year over 1000 persons injured in motor accidents were treated at a cost of £4399, but that the total sum recovered from these patients was only £62.

LONDON HOMŒOPATHIC HOSPITAL.—At the annual meeting it was stated that last year 1793 in-patients and the "record" number of 14,643 out-patients were treated. Increased activity has, however, produced the usual result of a discrepancy between income and expenditure, and the accumulated deficits now reach nearly £20,000.

KING EDWARD'S HOSPITAL FUND.—The Earl of Iveagh has been appointed a member of the General Council, in succession to his father.—Mr. Eardley Holland has been appointed a member of the Distribution Committee in place of Sir Francis Champneys, who has retired from the committee, of which he has been a member for 18 years.

SHEFFIELD PENNY-IN-THE-POUND SCHEME.—Last year this scheme produced £111,285, and the total amount of money yielded by all the sources controlled by the Joint Hospitals Council was £116,554. Hitherto the scheme's best year was 1925, when £108,000 was collected. Since 1920 the number of beds in the Sheffield hospitals has been increased by 277, and the total is now 1046.

FRACTURE DEPARTMENT AT WOLVERHAMPTON.—The annual report of the Wolverhampton and Staffordshire Hospital announces that, in order to cope with the increasing number of fractures, it is intended to set up a fracture and orthopædic department on modern lines. It will be placed under the charge of Mr. Anthony Blackstock.

CITY OF LONDON MATERNITY HOSPITAL.—At the annual court of governors, the Lord Mayor of London, the president, laid stress upon the need of a new nurses' home, which will cost £30,000. In the antenatal work last year there were 6000 attendances as compared with 3726 two years ago. The hospital trained 36 medical practitioners and students, 67 midwives, and six maternity nurses.

SEAMEN'S HOSPITAL SOCIETY.—Having recently taken over the Alexandra Memorial Hospital at Marseilles the society now possesses seven establishments. Last year's income was £89,996, and the expenditure £82,978. A new pathological department is to be added to the extension of the Dreadnought Hospital at Greenwich, which needs a supply of radium, for the purchase of which £900 is still required.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, April 3rd.—8.30 P.M., ORTHOPÆDICS. Paper: Dr. Charles Scudder (Boston, Mass.): The Treatment of Recent Fractures by Operation; to be followed by Sir Robert Jones, Prof. E. W. Hey Groves, Mr. H. A. T. Fairbank, and Mr. W. A. Cochrane.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, April 2nd.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

On Monday and Wednesday, at 2.30 P.M., there will be demonstrations of Medical Cases by Dr. A. J. Whiting and Dr. J. B. Alexander, respectively.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, April 2nd.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.

Daily, 10 A.M. to 5 P.M., In-patients, Out-patients, Operations, Special Departments, Anæsthetic and Operative Surgery Classes.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, April 5th.—4 P.M., Dr. Schlesinger: Some Complications of Acute Specific Fevers in Children.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY POST-GRADUATE COURSE ON CANCER.

WEDNESDAY, April 4th.—3.30 P.M. (in the Medical School, Leeds), Prof. G. E. Gask: Radium in the Treatment of Malignant Disease.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, April 3rd.—4.15 P.M., Mr. E. D. Telford: Pseudo-Coxalgic and Allied Conditions.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, April 5th.—4.15 P.M., Mr. P. G. McEvedy: Treatment of Hernia.

Appointments.

KENNEDY, C., M.B., Ch.B. Edin., has been appointed Assistant Gynæcologist to the Deaconess Hospital, Edinburgh, and to the Leith Hospital.

PIERCE, W. J., M.B., Ch.B. Liverp., Junior Medical Officer to the Liverpool Open-air Hospital for Children, Leasowe.

WEATHERHEAD, A. G. N., M.B., Ch.B. Edin., Medical Officer to the Royal Residential Schools for the Deaf, Old Trafford, and to Henshaw's Institution for the Blind.

St. John's Hospital for Diseases of the Skin: CORSI, H., M.B., B.Chir. Camb., Senior Honorary Medical Registrar; and HARTSTON, L., M.B., B.S. Lond., Junior Honorary Medical Registrar.

Surgeons under the Factory and Workshop Acts: CLAPPERTON, T., M.B., Ch.B. Aberd. (Oakham); LAWSON, R., M.D., Ch.B. Edin. (Hipperholme, W. Riding); and O'REILLY, J. J., M.B., Ch.B. Belf. (Chepstow).

Vacancies.

For further information refer to the advertisement columns.

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.

Belgrave Hospital for Children, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100.

Burton-on-Trent Infirmary.—H.S. £150.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist. At rate of £180.

Carlisle Non-Provident Dispensary.—Res. M.O. £250.

Derbyshire Royal Infirmary, Derby.—H.S., Asst. H.S., and Cas. O. Each £150.

Doncaster Royal Infirmary.—Third H.S. At rate of £150.

Dover, Royal Victoria Hospital.—H.S. £180.

Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas. Also Surgeon in charge of Out-patients.

Exeter, Royal Devon and Exeter Hospital.—H.P. At rate of £130.

Farnborough, Bromley Union Institution.—Res. M.O. £800.

Galway University College.—Professorship of Therapeutics, &c. Also Midwifery. Each £308–£320.

Halifax Royal Infirmary.—Third H.S. At rate of £100.

Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.S. and H.P. Also Cas. M.O. Each at rate of £100.

Holborn and Finsbury Hospital, Archway-road, N.—Second Asst. M.O. £300.

Hôpital Français, 172, Shaftesbury-avenue, W.C.—Phys. to In-patients. Phys. to Out-patients. Also Jun. Res. M.O. £100.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50 for six months.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.

Hospital for Women, Soho-square, W.—Asst. Anæsthetist.

Indian Medical Service.—Commissions.

Laboratories of Pathology and Public Health, 6, Harley-street, W.—Asst. Pathologist. £500.

Leigh Infirmary, Lancashire.—Res. H.S. At rate of £150.

Liverpool Eye and Ear Infirmary.—Third Hon. Anæsthetist.

London Fever Hospital, Islington, N.—Hon. S.

Lucknow University.—Professor of Anatomy. Rs.1450 per mensem.

Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S., Jun. H.P. and Jun. H.S. Also two Cas. O.'s. Each at rate of £100.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. Also Asst. Cas. O. At rate of £140 and £100, respectively.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Cas. O. £150.

Ministry of Health, Whitehall, S.W.—Deputy Regional M.O. £800.

Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120.

Paddington Green Children's Hospital, London, W.—H.P. and H.S. Each at rate of £150.

Preston, Lancs., County Mental Hospital, Whittingham.—Sixth Asst. M.O. £350.

Prince of Wales's General Hospital, Tottenham, N.—H.S.'s and H.P., also Jun. H.S. and Jun. H.P. At rate of £120 and £90 respectively.

Princess Louise Kensington Hospital for Children, North Kensington, W.—H.P. and H.S. At rate of £100 and £75 respectively.

Queen's Hospital for Children, Hackney-road, E.—P. in charge of Skin Dept.

Rhondda Urban District Council.—Asst. M.O. £600.

Royal National Orthopædic Hospital.—Med. Reg. £150.

St. Mary's Hospital for Women and Children, Plaistow, E.—Asst. Res. M.O. At rate of £130.

South Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £75.

Walsall County Borough.—Clin. Tuberculosis O., &c. £750.

Walsall General Hospital.—H.S. At rate of £125.

Walsall Poor-law Institution.—Res. M.O. £600.

Weston-super-Mare Hospital.—Res. M.O. £130.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Kingston (Surrey).

Births, Marriages, and Deaths.

BIRTHS.

REID.—On March 23rd, at Rodney-street, Liverpool, th wife of Andrew McKie Reid, *M.C.*, F.R.C.S., of a daughter.

MARRIAGES.

CLAYE—KNOWLES.—On March 26th, at S. Mary's Church, Garforth, Andrew Monyihan Claye, M.D. Leeds, M.R.C.S. Eng., to Marjorie Elaine Knowles, M.B. Leeds, M.R.C.S. Eng. (By Licence.)

MURRAY—CLARK.—On March 24th, at St. Barnabas' Church, Kensington, John Murray, O.B.E., M.B., C.M., of Llandrindod Wells, to Ethel Mary, daughter of the late George Miller, Esq., Newberries, Radlett, Herts.

NORMAN—DAVIES.—On March 22nd, at Llanishen Parish Church, Anthony Norman, M.B., B.S., to Muriel Davies, M.B., B.S., D.P.H., younger daughter of Mr. and Mrs. Morris J. Davies, Lake-road West, Cardiff.

DEATHS.

DAVISON.—On March 18th, at Bryanstone-road, Bournemouth, James Davison, M.D., in his 82nd year.

MUIR-SMITH.—On March 26th, suddenly, at Riversdale, 8, Upperton-road, Eastbourne, William Muir-Smith, M.B., C.M., J.P., aged 67.

MULLOCK.—On March 23rd, at a nursing home in Norwich, Richard Wilson Mullock, M.D., of Southwold, Suffolk.

PHILLIPS.—On March 23rd, at Harpur-place, Bedford, Francis Barclay Willmer Phillips, M.A., M.D. Oxf., B.Sc. Lond., D.P.H. Camb., Medical Officer of Health for Bedford, aged 75.

PLAYFAIR.—On March 25th, Hugh James Moore Playfair, M.D., F.R.C.P., F.R.C.S., Chevalier de la Légion d'Honneur, of Upper Brook-street, W., in his 64th year.

SEARSON.—On March 19th, James Searson, M.D., L.R.C.P.I., L.R.C.S.I., of Welbeck-street, W., in his 69th year.

STARK.—On March 18th, at Wanstead Park-avenue, E., Dr. Arthur Campbell Stark, aged 63.

WISE.—On March 23rd, at a nursing home in London, after a few days' illness, Alfred Thomas Tucker Wise, M.D., M.R.C.S., L.R.C.P., Swiss Federal Diploma in Medicine, of North Mills, Strete, Devon.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

PHYSIOLOGICAL PERSONALITY.*

By Robert Hutchison, M.D. Edin., F.R.C.P. Lond.,
PHYSICIAN TO THE LONDON HOSPITAL.

By physiological personality I mean those slight differences in the working of the bodily machine which occur in different individuals, but which are within the limits of health. Differences in the structure and configuration of the machine—in the "order of architecture" to which it belongs to use Mercier's phrase—we are all familiar with and those constitute the anatomical personality or physique. The peculiarities of the physique and of the physiological personality together determine how the machine will behave in various circumstances—or, if you like, how it will react to the stresses of the environment—and may be spoken of as its "constitution," by which is really meant the sum total of its structure and working. In the same way we might speak in the case of a motor of its having a Rolls Royce or a Ford "constitution," meaning that it has a structure and mechanism peculiar to those makes. In some persons the constitution diverges so far from the mean as to induce a proclivity or predisposition to suffer from particular types of disease, and such a type of constitution may be called a "diathesis," and accordingly we hear of a "rheumatic" diathesis, of a "tuberculous" diathesis, and so forth, and these may be recognisable from the anatomical personality alone. To return to the simile of the motor we might in similar language describe a type of car which from its structure and working has a tendency to get over-heated as suffering from a "calorific" diathesis.

Again, just as the "constitution" of the bodily machine determines liability or otherwise to disease so, on the mental side, it determines "temperament" which is that part of the character which is dependent upon anatomical and physiological peculiarities of the individual and is unalterable; but of the relation of character to physiological personality I shall have something further to say later on.

Now, although we still sometimes hear a patient say that Dr. So-and-So "understands his constitution" there is no doubt that less importance is attached by the profession to differences in constitution than was once the case. As you are doubtless aware it was the fashion at one period in medical writings to describe four main types of constitution—the sanguine, lymphatic, bilious, and nervous, based mainly upon external differences in bodily appearance—i.e., upon anatomical personality. Gradually, however, these terms have disappeared from medical literature. Nor is it difficult to understand the reason for this. When physiology first began to be accurately studied, the methods employed were such as to reveal only the nature of the grosser processes and modes of working in which all human beings are alike, and it is only within recent times that they have become sufficiently delicate to distinguish the finer variations in these processes which may be met with in different individuals of apparently normal type. With the rise of an exact pathology, too, and a more accurate understanding of the immediate causes of disease attention came to be concentrated chiefly on the exciting agent in morbid processes to the neglect of the "soil" on which the disease is implanted. Here, also, there has been a decided reaction in the last few years.

I think, therefore, that one may profitably make the attempt to inquire into the question of constitutions, not from the external or anatomical point of view,[1] but by considering what are the possible variations in the mode of working of the machine which are yet within the limits of health—that is to say, into the essence of physiological personality.

It will be obvious that such variations may affect either the vital working of the machine as a whole—i.e., its metabolism, or they may be found in the functional capacity of its parts—i.e., the viscera.

Individual Variations in Metabolism.

There may be individual differences: (1) in the total amount or rate of tissue change in the body, or (2) in the nature of the by- or end-products of katabolism. The former one may speak of for convenience as quantitative and the latter as qualitative differences.

(1) That the rate of metabolism, and in consequence the total turnover of material, varies in different individuals admits of no doubt. In part such differences may be explained by variations in anatomical personality—i.e., by differences in shape and build.[2] The larger the surface of the body relative to its bulk the greater is the amount of heat loss and the greater therefore the demand for heat production in the chemical regulation of the body temperature. It is for this reason that tall men (who have relatively a large surface) have difficulty in storing fat. Children, also, who have a large surface in proportion to their bulk, have an active metabolism for the same cause. Apart from gross anatomical differences in build and shape, however, there can be no doubt that the "make-up" of the body varies greatly in different individuals and has a profound influence upon general metabolism. Where the muscles are large and well developed, for instance, the amount of oxidation is certainly greater than in cases in which a large mass of the body is composed of a comparatively inert material such as fat.

The amount of fluid in the tissues, too, probably exerts an influence, and there is no question that this varies not only in different individuals but in the same individual at different times.[3] In cases of cachexia and in old age it is well known that fluid in the body is increased at the expense of fat, but apart from such instances as these, everyone must have seen patients who could not be described as œdematous but who have yet lost an enormous amount of weight after the establishment of a profuse diuresis. It seems certain, indeed, that individual differences in the weight of the body are more often dependent upon fluctuations in the amount of fluid it contains than is generally realised, and it is inconceivable that such differences should be without effect upon metabolism, whilst there is some clinical reason for believing that they also influence the capacity for resistance to acute infections. The drier the body the greater the resistance appears to be. In other cases the greater activity of metabolism is due probably to an unusual degree of vital activity in the cells composing the body. Young cells have more vitality than old, and as age increases the physiological personality tends to change in a direction of a slowing of metabolism.

A very important influence on the general rate of metabolism is certainly exerted by "internal secretions," particularly by the thyroid secretion which is the most potent stimulant of general metabolism we know, although other internal secretions, especially those of the reproductive organs, also seem to exert a profound effect. The powerful influence of the thyroid is shown in the general diminution of oxidation in cases of myxœdema, and it is probable that there are very many cases in which the thyroid secretion, though not altogether absent, is being produced in insufficient amount. It is not unlikely that the tendency to put on fat after middle life which so many people exhibit is to be attributed to a waning activity of the thyroid, and cases of so-called "endogenous" obesity (i.e., those in which fat is stored up even on a diet of low caloric value) may have a similar origin.

There is yet another factor in producing variation in general metabolism which cannot be ignored, and that is the influence of the nervous system. It seems clear that impulses emanating from the central nervous system exercise a control over the nutrition of the tissues possibly by restraining katabolism. The best example of this is seen in the rapid wasting of muscles which are cut off from their connexion with the spinal cord, and if this "grip" of the nervous system on the tissues varies in different individuals, as it may do, metabolism and nutrition are bound to be affected. In all these ways, then, and doubtless in others, the general rate or amount of metabolism may vary and the physiological personality or constitution of the individual be influenced.

How differences in "constitution" which result from these variations in metabolism affect health or individual liability and reaction to disease we do not by any means fully know, but it is certain that they cannot be left out of

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* A lecture given to the Cambridge University Medical Society, February, 1928.

[1] An elaborate study of the relationship of anatomical personality (human morphology) and disease has been begun by Dr. George Draper in America (Human Constitution. London and Philadelphia: W. B. Saunders Company. 1924), mainly on anthropometrical lines. He proposes to extend his investigations later to the study of physiological, immunological, and psychological characteristics.

[2] Dr. C. J. Macalister has made the interesting suggestion (THE LANCET, 1924, ii., 533) that some metabolic peculiarities in individuals may be due to a partial reversion to an ancestral type of metabolism—carnivorous or herbivorous, as the case may be.

[3] Czerny applies the term "hydropic constitution" to the tendency shown by some children to hold back fluid in the tissues; and MacAuliffe suggests that, since biochemically all living things are colloidal structures, their form is perhaps determined by their power of water-absorption and retention, or, as he calls it, "hydrophylly." Those creatures that are built on ample lines and are cubic in form may be regarded as positively hydrophyllic, whereas the angular and lithe are negatively hydrophyllic. (E. Miller.)

account. On the whole, one might expect that an exceptionally rapid metabolism would lead to impairment of nutrition with all its consequences, whilst an unusually slow rate of tissue change—a retardation of metabolism as Bouchard called it—would favour the production of obesity with all its disadvantages, and might induce also the imperfect carrying out of the final stages in the disintegration of some of the products of metabolism with the liberation of abnormal constituents into the blood stream which in their turn might result in various forms of disease such as gout. Whether variations in the general rate of metabolism affect the power of withstanding disease it is difficult to say, but it seems reasonable to suppose that an active metabolism makes for vigour and resistance. It is interesting in this connexion to remember that part at least of the beneficial effects of "open-air" treatment is now ascribed to the stimulation of general metabolism which it brings about.

Apart from variations in total metabolic activity, there exist undoubtedly what one may speak of as qualitative differences in the metabolic processes of the body. As Sir Archibald Garrod, who has devoted a great deal of attention to this subject, has pointed out, it is not likely that alternative paths exist for katabolism, but when abnormal end-products appear it is more probable that they simply represent an arrest at some point on the normal downward stage. That an inability completely to carry out certain metabolic processes exists in some individuals is shown by the examples of alkaptonuria, cystinuria, and pentosuria, and doubtless there are kindred abnormalities which we have not yet learnt to recognise. If it be the case, as some believe, that an inability to carry out fully the katabolism of purins is a factor in the production of gout, we have an example of how a variation in physiological personality may actually produce disease, and perhaps an inherent disability in dealing with sugar—hypoglycopyresis as Dr. O. Leyton has called it—may be the foundation of the family tendency to diabetes so often met with. Such qualitative differences in metabolism may also be at the root of idiosyncrasies to certain foods and of the varying reaction in individuals to drugs. There is room, too, for wide differences in chemical constitution in different individuals. The possible variations in the exact make-up of the protein molecule, for instance, are almost infinite and may account for such phenomena as protein sensitiveness and an asthmatic diathesis. The reaction of the body may also vary, and Dr. H. A. Ellis has even made the interesting suggestion [4] that all people can be divided into acid, normal and alkaline constitutions, and that whether an individual be what we call an "acid" or an "alkali" controls both his health and temperament and determines to some extent his liability to disease; an "alkaline" constitution being part of the tuberculous diathesis whilst an acid one predispose to gout. This suggestion certainly opens up possibilities of the most fruitful lines of inquiry.

Physiological personality, however, depends not merely upon the working of the machine as a whole, but upon variations in the efficiency of its component parts, the viscera. I have not time, even if I had the knowledge, to deal fully with this aspect of the subject, but we may glance briefly at some of the factors which may underlie variations in the functional activity of the chief visceral systems in different individuals.

The Digestive Organs.—At the outset we have to consider the possibility that in some persons the digestive apparatus is really too small or ill-developed to supply fully the needs of the tissues in the way of nutrition. I am not aware whether this possibility has ever been the subject of accurate investigation, but we know clinically that persons in whom the lower thorax is contracted so that there is little room for the stomach and liver are peculiarly prone to suffer from functional digestive disorders. In such subjects the abdominal organs are often unduly mobile from maldevelopment of the fixing bands and ligaments with the result that visceroptosis with all its attendant train of disabilities readily ensues. This is an essential part of the "morbus asthenicus," a constitutional peculiarity which almost amounts to a diathesis, predisposing as it does to functional dyspepsia and to neurasthenia. It will be found, I think, that a more or less sheltered life is generally instinctively chosen by such persons, and that on the temperamental side they are apt to suffer from a feeling of "insufficiency." Dr. Parkes Weber,[5] in a paper on Automatic Vital Safety-Valve Actions and Reactions, speaks of such persons as being of a "low-pressure type," and considers that they have a safety-valve which comes into action at low pressure in the form of fatigue, dyspepsia, &c. The robust, full-blooded individual, on the other hand, belongs to the "high-pressure" type and *his* safety-valve only comes into action at high pressure—for example, in the form of hæmorrhages.

Apart from this general disability, which is really a fault of physique, we know quite certainly that in regard to those functions of the stomach which permit of accurate investigation great individual differences appear even within the limits of health. In the case of secretion, for instance, investigation shows that the production of hydrochloric acid is higher in some healthy persons than in others, and that it is higher in the young than in the old. Where the variation is in the direction of an excessive production we have a physiological personality which, as Hurst has pointed out, is certainly predisposed to suffer from a specific form of disease—namely, duodenal ulcer. Take again the other great function of the stomach, the exhibition of muscular tone. Here, also, there are undoubtedly individual variations in efficiency which are probably inborn and persist throughout life. Some people, as is well known, always have splashy stomachs and readily suffer from "slow" digestion with flatulence and other signs of disordered function. Such persons, indeed, make up the larger proportion of habitual functional "dyspetics." Whether this defect of the muscular function is due to congenital feebleness of the muscle itself, to an impaired elasticity, to a defective supply of nervous energy, or of an adrenal hormone is not known, but the marked aggravation of the disorder by fatigue, either mental or physical, points rather to a nervous basis. That, however, is immaterial. The main point is that here again we have a peculiarity of physiological personality which may greatly affect health and liability to disease, and, as we shall see later, the mental characteristics of the individual as well. On the other hand, there may be an inborn exaggeration of tone in the stomach which often accompanies an excess of acidity, the two constituting together the ulcer diathesis.

Passing from the stomach to the other great digestive organ, the pancreas, we find ourselves hampered in studying physiological variations in its activity by the difficulty of investigating the composition and amount of the normal secretion. I would suggest, however, that differences in digestive capacity in different individuals may sometimes be due to differences in the amount or composition of the pancreatic juice. Especially does it seem likely that the congenital inability to digest fats easily may have some such cause. There can be no question that nutrition may be greatly impeded particularly in infancy by this inability and the liability to certain diseases, and in particular to tuberculosis, increased by it. In extreme cases of congenital defect of pancreatic secretion we know that the whole nutrition and development of the body is interfered with and a condition of infantilism may result.

Of variations in intestinal digestion we know even less than we do of the pancreatic, but as regards the other great intestinal function-motility, there seems to be no doubt that great individual differences exist, and that in some persons there is an inborn deficiency of intestinal tone and peristaltic activity which predisposes to constipation with all its consequences, physical and mental. Here, just as in the case of the stomach, it is uncertain how far the deficiency is directly due to the intestinal musculature and how far it is the consequence of defective innervation. Peculiarities of anatomical personality due to differences in the length and fixation of the colon may also contribute largely to such defects of action, as Mr. G. E. Waugh has pointed out.

But of all the abdominal organs it is the liver variations in whose efficiency and activity one might expect to produce the greatest effect on constitution and character seeing that it touches organic life at so many points. It will be sufficient to remind you that the liver is both a glycogen and a fat former, that it removes the disintegration products of the red blood corpuscles, that it is concerned in the final stages of proteolysis, and that it acts as a "portal sentinel," preventing to some extent the passage of injurious substances from the intestine into the general circulation. The efficiency or otherwise with which it discharges these functions is bound to have a far-reaching influence on physiological personality. It has often been suggested that there is such a thing as a congenital "hepatic inadequacy" affecting either the capacity of the liver as a whole (possibly from its being too small for the needs of the organism) or involving one or more of its special functions. The validity of such a suggestion is very difficult to determine, but there is a good deal of clinical evidence in favour of the view that the gouty diathesis may depend in the last resort upon a relative incapacity on the part of the liver, and that liability to such conditions as "bilious attacks," migraine, and cyclical vomiting may have a similar origin. The recent introduction of tests for estimating the efficiency of the liver may enable us to acquire a further insight into individual variations in function and into the so-called hepatic inadequacy.

[4] Reaction in Relation to Disease. H. K. Lewis and Co., Ltd. 1924.

[5] Med. Press, 1917, clv., 83.

The Circulatory System.

That the efficiency of the heart is greater in some individuals than in others is certain. It has long been known, for instance, that the size of the organ is by no means the same even in normal subjects, and Dreyer has shown that variations in this respect are related to differences in the extent of body surface. The larger the surface area the greater is the size of the heart for, as we have already seen in another connexion, a large surface means a great heat loss, and this in its turn necessitates an active circulation and throws more work upon the heart. This is really a question of anatomical personality, but it is reasonable to suppose that a heart which, even to meet the normal physiological requirements of the body, requires to be above the average in size must have less margin for hypertrophy to meet unusual exigencies of stress or disease. Hence in this respect, just as in the maintenance of body temperature and nutrition, the possession of a relatively large body surface is a handicap and a source of weakness in the "constitution." Apart from the question of size there is scope for considerable variation in the various physiological properties of the heart muscle—in excitability, conductivity, contractility, and tonicity—and there is room, too, for much latitude in the degree of control exercised by the nervous system over the organ.

Although we are not yet in a position to test the efficiency of each function of the heart in any given individual, there is ample evidence of considerable variations in their working, and it is not surprising that scarcely two individuals give identical electrocardiograms. Individual differences in the frequency and force of the pulse and the occasional occurrence of habitual irregularity of the heart throughout life are further examples of such evidence. It is common knowledge, too, that the degree of cardiac acceleration in response to the same amount of physical effort and the subsequent decline of rate vary materially in different individuals. This "lability" of the heart's action may be regarded as a sign of a neurotic constitution. It is when the heart is subjected to unusual stress and strain, however, that inborn variations in its efficiency become manifest. One person, for instance, may pass through an excessive physical effort with impunity which in another induces serious distress. Here we are probably dealing with congenital differences in tonicity which we have already seen play such a large part in the relative efficiency of the stomach and intestine, but whether these differences are structural—i.e., essentially anatomical (due, for instance, to a deficiency of elastic tissue) or "vital" in origin we are not yet able to say. That the efficiency of the myocardium is a large factor in physiological personality, however, is certain, and it determines to a great extent the capacity of an individual to stand physical strain or the stress of an acute illness, and it will be found, I think, that people who are handicapped by these congenitally inefficient hearts instinctively avoid violent exertion. A large number of the recruits who broke down in the war with heart troubles (D.A.H., and so forth) probably belonged to this class. Like the heart the blood-vessels, too, exhibit a varying capacity to stand strain and wear and tear which is probably due to inborn differences in the elasticity of the vessel wall—to the quality of the "tubing" as Osler put it. How greatly such differences affect constitution is recognised in the saying that a man is as old as his arteries.

Variations in blood pressure in different individuals also play a large part in determining differences in constitution especially as life advances. The tendency to develop high tension in later life which is characteristic of some individuals and even of families is probably not due to any peculiarity of the vessels themselves, but a secondary result either of some metabolic error, of "renal inadequacy," or possibly, of over-secretion on the part of the suprarenals, but however brought about it is a constitutional peculiarity which it is of the greatest importance for the physician to recognise. It has been described by Hurst as a hyperpietic diathesis.

Lastly, there seem to be considerable differences in the vasomotor control of the blood-vessels in different individuals which determine the existence of a "good or "bad" circulation with consequent varying capacity to stand the effects of cold and varying predisposition to such disorders as chilblains, Raynaud's disease, migraine, &c. When the control of the splanchnic system is inherently defective, the blood pressure varies greatly with the position of the body, fatigue seems to be badly borne, and pooling of the blood in the splanchnic area with consequent faintness is readily induced. Differences in vasomotor control may also perhaps be at the root of the varying susceptibility of different people to barometric pressure and electrical conditions of the atmosphere—to "weather" in fact.

The Blood.

Individual peculiarities of the blood have not been much studied, but several are at least conceivable. In the first place, the total volume of the blood may vary in the direction of true plethora—the sanguine temperament of the older writers. The number of red and white cells per cubic millimetre, is also to some extent a variable quantity, and so, within certain limits, is the relative proportion of the different white cells and the percentage of hæmoglobin, some people having all their lives a slightly chlorotic blood. The destructibility of the red cells, too, is in all probability different in different persons. In extreme cases, as in family jaundice, there is such an unusual inborn fragility of the red corpuscles that visible pathological effects are produced, but such a condition is compatible with long life and comparative health, and in its slight degrees might remain unnoticed though it would certainly predispose to anæmia. Little as we know of these grosser histological variations in the blood we know even less of individual differences in its chemical composition, although the possibilities in this direction are almost infinite, for it must be remembered that all personal peculiarities of metabolism must be reflected in it. Recent investigations, however, have shown that while the total nitrogen, non-protein nitrogen, and sugar in the blood vary in the same individual from week to week there is a tendency for the level of these variations to be individual and the sum of the average deviations of the constituents may be an index of the metabolic stability of that person. The absolute amount of creatinine also is a constant for the individual.

In hæmophilia, again, there appears to be an inborn defect in the prothrombin, and it is possible that lesser degrees of this may determine a greater or lesser tendency to bleed easily in normal persons. Further, the amount of cholesterol in the blood seems to vary in different people, and Parkes Weber has suggested that there may be a constitutional hyper- or hypo-cholesterolæmia which may determine the individual's liability or otherwise to suffer from certain diseases, hyper-cholesterolæmia being a part of the gall-stone "diathesis"—i.e., that sort of constitution which predisposes the person to suffer from gall-stones and (probably) from other disorders as well. Lastly, there can be no doubt that there are wide individual variations in natural immunity of which the blood is the vehicle. This has been shown, amongst other ways, by the results of the Schick test for diphtheria.

Respiratory System.

The chief individual variations in the respiratory system that we can recognise are differences (1) in the vital capacity, and (2) in the elasticity of the lungs. The former is capable of exact measurement and has long been known to vary greatly in different persons depending upon the size and shape of the chest and the elasticity of its wall. Defect of vital capacity is well recognised as a serious constitutional handicap, lessening fitness for undergoing some forms of exertion and predisposing to pulmonary tuberculosis. It is really, however, an affair of physique. An inborn deficiency in the elasticity of the lungs or an undue tendency for impairment of elasticity to set in as age advances seems to play a part in the production of emphysema and may seriously interfere with activity and ultimately shorten life. It may be compared to the congenital deficiency of elasticity and "wearing" power in the walls of the blood-vessels to which reference has already been made, and with which indeed it is often associated. The excitability of the respiratory centre seems also to vary in different persons, and Hurst suggests that an inborn exaggerated irritability of the bronchial centres is an essential element in the "asthmatic diathesis."

The Excretory Organs.

Of individual variations in activity of the organs of excretion—the skin and kidneys—and of the degree to which such variations may affect physiological personality we know very little. It is true that the texture and so forth of the skin may determine its liability to disease, but that is really a matter of anatomical personality. We know that the cutaneous secretory activity varies greatly in different individuals, but the effects of this on constitution and temperament are not so obvious. Persons with sluggish skins are, one should suppose, constitutionally unsuited to live in tropical climates, and it has also been suggested that habitual inactivity of the skin throws more work upon the kidneys and constitutes to some degree a "renal diathesis." All this, however, is rather speculative.

Variations in the perfection of the kidney functions must be of much more significance than kindred variations in cutaneous efficiency; but of these also we know very little. We know, however, that the acidity of the urine varies greatly in different persons partly as a reflection of metabolic peculiarities and partly as the result of variations in concentration which are dependent upon the greater or lesser functional activity of the skin, and it has been shown by Osman that a high acidity of the urine predisposes to the development of nephritis whilst it also favours the appearance of some forms of calculus. The application of the now existing tests for renal efficiency to large numbers

of "normal" individuals should throw light on physiological variations in kidney function, and enable us better to recognise constitutional peculiarities and weaknesses which may render the subject of them liable to disease.

The Ductless Glands.

Variations in activity of the different ductless glands no doubt play a large part in determining both anatomical and physiological personality, but so much has been written on this subject in recent years that I need not refer to it at any length. We know, for example, how variations in pituitary activity may influence growth and fatness, how the thyroid affects metabolism, how the parathyroid regulates the calcium exchanges and through these the irritability of the nervous system, how the adrenals and gonads determine the degree of virility, and so on. There can be no doubt, too, that there is room even within the limits of health for wide variations in the activity of individual endocrines, and that such variations must profoundly affect "constitution." None the less I think the tendency at present is to exaggerate the part played by the ductless glands, or perhaps I should say to assign to them an independence and initiative which they may not possess. To take an example: adrenal dominance is said to produce an individual of the virile, "live-wire," "quick in the uptake" type. Even granted that such individuals have unusually potent adrenals—and this cannot be said to be really proven—the question arises, is the adrenal dominance primary or is the overactivity of the gland determined by the nervous system?

Which is master, the endocrines or the brain? This question is really fundamental, for it applies not only to the relation between the nervous system and the endocrines but to the relation between the nervous system and the functional activity of all the viscera. It is possible, in short, that in the last resort most differences in *physiological* personality are nervous in origin, even although gross disease in a ductless gland may produce a primary but pathological change in the constitution. In health, in a word, the endocrines are perhaps the servants of the central nervous system: if they take command disease results. To this point I shall return again later.

The Nervous System.

That there must be great variations in the working of the nervous system is obvious from the striking differences in intellectual capacity in different individuals, and some of these variations are capable of exact measurement in the psychological laboratory. Variations in attention, memory, and reaction time are examples, although these affect character and intellect more than constitution. There are also differences in the "rhythm" of the motor processes, for instance the rate of walking, or of performing muscular acts natural to any given individual. These probably depend upon the "neuronic patterns" peculiar to the particular brain. Berry, in a paper on the Physical Basis of Social Inefficiency,[6] points out that the most superficial layer of cortical neurons is the latest to appear in evolution and that its depth varies greatly in different individuals. He considers that social efficiency depends in great measure on the degree of its development. "The problem of the range of variation and of the limits of normality," he says, "is an extremely important one in all biological processes and does not appear to be fully realised by the medical profession"

From the point of view of "constitution," however, one of the most important differences affecting the nervous system is what one may speak of as "fatiguability" or liability to exhaustion of function, which perhaps depends upon inherent stability or otherwise of the molecules of the nerve cells. A stable nervous system confers vigour upon the constitution whereas one which is easily fatigued predisposes to neurasthenia and functional disorders, although not, perhaps, to serious disease. There seem, also, to be degrees in the efficiency of the barrier which the nervous system sets between conscious life and that of the viscera, a low degree of such efficiency disposing to hysteria and psychasthenia.

It must be remembered, further, that in consequence of the control which it exerts over the viscera and possibly, also, over the nutritive processes, and in virtue of its integrative functions largely exercised through the endocrine system, the nervous system may be responsible for variations in physiological personality which are not at first sight likely to be attributed to it, as it acts indirectly by affecting nutrition, the functions of the heart and stomach, the blood pressure, and so on. As is well known, Dr. Eppinger and Dr. Hess originated the theory, which has since met with pretty wide acceptance, that the relative degree of control or influence of the vagal and of the sympathetic parts of the vegetative nervous system differs in different individuals, and that people may be roughly divided into vagotonics and sympathicotonics according to which nerve influence preponderates in their visceral control, vagotony being regarded as a form of constitutional inferiority.[7] There can be little doubt, I think, that this conception has been overdone and has been made to cover too wide a clinical field, but there is equally little doubt that "there is something in it," and that some facts of physiological personality may find in it their explanation. In the long run, perhaps, all variations in visceral function in different individuals which cannot be attributed to actual differences in structure may really be due to variations in nervous control. From this point of view the ultimate seat of physiological personality would be in the central nervous system. This need not be surprising if one remembers that the human central nervous system is the last product of animal evolution, and that variations in it are necessary in order to afford an opportunity for the play of natural selection.

We may now pass on to consider the ways in which physiological personality may determine "temperament" and character.

Influence of Physiological Personality on Character.

There can be no doubt that a man's character is largely dependent upon his physical constitution. This is certainly the case so far at least as several important elements of character are concerned, such as energy, courage, vivacity, and good temper, although as regards some of the finer elements, sympathy, sincerity, and so forth, the physical basis may not be so obvious. "Yet it does appear to me" said Sir Walter Scott, "that high and independent feelings are naturally though not uniformly or inseparably connected with bodily advantages. Strong men are usually good-humoured, and active men often display the same elasticity of mind as of body," and, to quote Mr. H. G. Wells, it may be that, "even the capacity for friendship is a question of physique."

Much might be said even of the influence of gross anatomical peculiarities upon character. What, for instance, is the effect of stature upon mental traits? Is the big man more equable and large minded, less excitable, fussy and self-assertive than the smaller man? Or was Bacon right when he said, "that Nature did never put her precious jewels into a garret four stories high and therefore exceeding tall men have ever empty heads," or quaint Thomas Fuller, when he expressed the same idea in very similar language, "Often the cock loft is empty in those whom Nature hath built many stories high."? I hope not. Or had George Eliot any reason for her belief that red hair and brains never go together?

Herbert Spencer, in an interesting chapter of his Autobiography, ventures the opinion that much might be said about the mental effects of bodily deformity. One, he suggests, who knows that he is looked upon by others with disfavour or pity cannot help being in some measure soured, or if his deformity is of such a nature that he cannot join in the pursuits of normal men he may become the prey of envy. In present-day language he is said to suffer from an "inferiority complex." Again, is shyness not often the consciousness of some physical shortcoming, such, for example, as a pronounced squint or stammer? One might elaborate the argument at length, but we are concerned at the moment more with the influence of physiological than of anatomical personality on character, and it is this aspect of the subject that I wish now to consider.[8]

[6] Brit. Med. Jour., 1921, ii., 72.

[7] According to Eppinger and Hess, the vagotonics are tall, thin, and angular, with a tendency to sweaty and greasy skins, acneiform eruptions, cold extremities, and mental hebetude. Sympathicotonics, on the other hand, have dry skins, prominent eyes, and dilated pupils. They are less torpid than the vagotonics, and in extreme cases are given to excessive activity. The activity of the thyroid and suprarenal systems being heightened there is a more rapid response to external demands than in the vagotonics. Most persons, of course, present a balance between sympathicotonia and vagotonia, the two systems being in antagonism. Apart, also, from complete types of the two (which some authorities deny to exist at all) there is no doubt that the same organ may in different persons be predominatingly under vagus or sympathetic influence respectively, and that the liability of the organ to functional disorders may depend upon which influence preponderates.

[8] An elaborate study of the relation of anatomical personality to character has been published by Kretschmer (Physique and Character. Kegan Paul. 1925). He describes three leading types of physique, the asthenic, the pyknic, and the athletic, and attempts to correlate these with two main types of temperament, the cyclothymic—characteristic of the pyknics—and the schizothymic which prevails in the asthenic and athletic anatomical types. The cyclothymes are the ego-centrifugal; the schizothymes are ego-centripetals with a great disparity between the life of thought and that of feeling. From the psychiatric point of view the pyknics make up most of the manic-depressives: the asthenics and athletics most of the schizophrenics. Kretschmer's study is interesting, but it is based on a limited material observed amongst the insane, and many of his conclusions and distinctions seem far-fetched and artificial, whilst his terminology is needlessly obscure.

Let us look first at the temperamental influence of different types of metabolism. Just as a large total metabolic turnover indicates a high degree of vitality of the cells so also it probably predisposes to a high degree of mental energy. One has merely to consider the mental sluggishness of the subject of myxœdema—an extreme example of abnormally slowed metabolism—to be convinced of this. An active metabolism, in fact, seems to be associated with energy of will, high animal spirits and restlessness, whilst a slow metabolism goes with the reverse qualities. Again, the type of metabolism which predisposes to gout—the "acid" type of Ellis—goes often with a forceful and irritable character and high intellectual capacity. Hence gout has been described as "dominus morborum et morbus dominorum"—whilst the type predisposed to tuberculosis—the "alkaline" type—is accompanied by an imaginative and emotional—in a word by the "artistic" temperament.

Close, however, as the relation between metabolic type and temperament no doubt is, the relation between visceral function and character is probably even closer. As Herbert Spencer said: "Mind is not as deep as the brain only, but is, in a sense, as deep as the viscera." Feeling-tone, a sensation of well- or ill-being, of exaltation or depression, depends largely upon sensations derived from the activity of the viscera, which sensations, however, are normally outside consciousness except for the feeling-tone they engender. (Head.)

The abdominal viscera seem to be of predominant importance in this respect. Congenital feebleness of the digestive apparatus may lessen mental energy or at least impair cheerfulness and sociability. Dysentery saps the courage of an army, and as that wise physician and philosopher, John Locke, said, "People who have relaxed bowels have seldom strong thoughts." The relation of the abdominal visceral functions to mental and emotional states is so well recognised popularly as to have become proverbial. Thus we speak of a person as having "no stomach" for a thing, meaning that he lacks courage for it, or, more colloquially, he is said to be lacking in "guts." "Girding up the loins" is synonymous with screwing courage to the sticking place, whilst the mental depression associated with defective action of the liver is recognised in the well-known facetious reply to the old question, Is life worth living?—"it depends on the liver."

Peculiarities in the working of the circulatory apparatus might be expected to influence temperament by affecting the circulation through the brain. Oliver Wendell Holmes said, that "courage was an affair of the diameter of the carotid arteries," and anything which impedes the flow of blood to the brain seems to lessen it, thus the hunting man with early cerebral atheroma begins to "funk" his fences whilst the financier loses nerve for his speculations. The delirium that accompanies a failing heart is, as Head points out, an extreme example of a mental change dependent directly on altered vascular conditions. On the other hand, so good an observer as Sir William Broadbent found no constant relation between the pulse and temperament. "Speaking generally," he wrote, "I have found physical strength, energy and endurance, impartially associated with small low tension pulse, and with large arteries and high tension, and the reverse. I can say the same of intellect, perseverance, courage and force of character generally: they appear to be absolutely independent of circulatory conditions."

Imperfect purification of the blood from defective action of the kidneys may also influence the brain and through that the whole temperament. We see this in an extreme degree in cases of uræmia, and in a lesser measure it may occur even in conditions short of disease. As Dr. Harry Campbell has said, "If two persons were to exchange bloods they would, in large measure, exchange temperaments."

Fully to consider the relation between variations in the functional activity of the nervous system and character would take us too far afield and would involve a discussion of the whole relationship of mind and body. How profoundly, however, an alteration in the state of the nervous system affects temperament may be seen in the changed personality witnessed in neurasthenia, and in general paralysis or even more dramatically in the deterioration of the moral character which sometimes follows an attack of lethargic encephalitis. A difference in the rate of the nervous processes, too, must influence capacity both in the physical sphere as in "striking" a fish and in the purely mental domain as in grasping an opportunity. Again, a predominance of sympathetic control is believed to produce an energetic, adaptable type of character, whereas when the para-sympathetic has the upper hand a slower and more sluggish type results. It may be contended,[9] however, and I think with truth, that it is chiefly the intellectual side of character which is directly affected by nervous action and that its finer moral qualities are largely independent of the physiological personality.

Nor can we leave out of our survey the influence on temperament of variations in "endocrine personality," but our ignorance here is so great that it is unwise to be dogmatic. There can be no doubt, however, that variations in the activity of the organs of internal secretion may exert a profound influence on character, though it is probably an exaggeration to speak of them as Berman does as "The Glands regulating Personality," or like another author, as "The Glands of Destiny," and to assume that all temperamental differences can be traced back to this origin.[10]

We must beware of too mechanistic a view. It may be true that the thyroid is our carburetter, the adrenals our magneto, and the central nervous system our steering-gear, but there is a god in the car all the same, call it "will," "psyche," "soul," or what you please, who has a large measure of control over the whole mechanism and upon whose nature much the most important part of character depends.

In conclusion, if there be any truth in what has been said, its recognition should at least save us from what someone has spoken of as "the commonest fault of the prescriber—the easy-going habit of assuming that every one is alike." It should convince us that although men may be born free, as the preamble to the American Constitution states, yet they are not born in any physiological sense "equal"; that man is not one but a diversity of creatures. It should impress upon us the futility of trying to lay down "rules of health" applicable to everyone and the duty of teaching each of our patients how to manage his own machine so as to get the best out of it, remembering that there are self-made men physically as well as financially. Finally, it should uplift us as doctors with the thought that in so far as we are able to modify or correct defects in the physiological personality we may influence character, and in so doing become active co-workers with those moral and spiritual forces which mould mankind.

[9] William James was of opinion that where the character, as distinguished from the intellect, is concerned, the causes of human diversity lie chiefly in differing susceptibilities of emotional excitement and in the different impulses and inhibitions which these bring in their train. It may well be, however, that emotional susceptibility depends in its turn on the character and balance of the endocrine and vegetative nervous systems.

[10] Over-action of the suprarenals, for instance, seems to be associated with a virile character, but with a dominance of fear in the temperament and a liability to the occurrence of phobias and anxiety states. Under-activity, on the other hand, is associated with a general feebleness of character. An active thyroid is believed to conduce to creative activity and to be the basis of what is called the "artistic" temperament, whilst pituitary activity and musical or mathematical ability are said to go together. Much of this, however, is highly speculative.

THE JERUSALEM ACADEMY OF MEDICINE.

THE Academy of Medicine of Jerusalem is a society of medical practitioners formed to unite, on common basis of scientific interests, professional men who might otherwise remain far apart. The 45 members speak at least ten different languages, and come from many different training schools. The successful publication of the first annual bulletin is proof, therefore, of a triumph of tact and perseverance over many obstacles. It contains a brief résumé of the year's proceedings, which included 11 scientific meetings and a dinner. Among the papers read at these meetings and published here in abstract were several on Typhoid in Palestine, one on Blindness in Palestine, and others on the Plague, Goitre, and Collapse Therapy in Pulmonary Tuberculosis. We wish the Academy of Medicine in Jerusalem every success.

A YEAR BOOK OF LEARNED SOCIETIES.

Messrs. Charles Griffin and Co. have just issued for the forty-fourth year in succession a Year Book of the Scientific and Learned Societies of Great Britain and Ireland. This is a record, compiled from official sources, of the work done in science, literature and art during the session 1926–27 by numerous societies and Government institutions. In the preface emphasis is justly laid on the fact that the prosperity of a nation is largely based on the labour of its scientific investigators, whether in the matter of production or of the health of the producers. The year book affords striking testimony of the amount and variety of original scientific work put forth within a twelvemonth. Section XIV. of the year book, which is devoted to Medicine, contains more than 50 pages, within which are enumerated the publications of the Ministry of Health and of the Medical Research Council, and the titles of papers read at the principal medical societies. There is also a list of the smaller medical societies with names of president and secretary attached. The year book is of a type of publication which accumulates value from year to year. The price is 18s.